

Global Markets Analysis Report

A MONTHLY PUBLICATION OF GINNIE MAE'S
OFFICE OF CAPITAL MARKETS



PREPARED FOR GINNIE MAE
BY STATE STREET GLOBAL ADVISORS
URBAN INSTITUTE, HOUSING FINANCE POLICY CENTER

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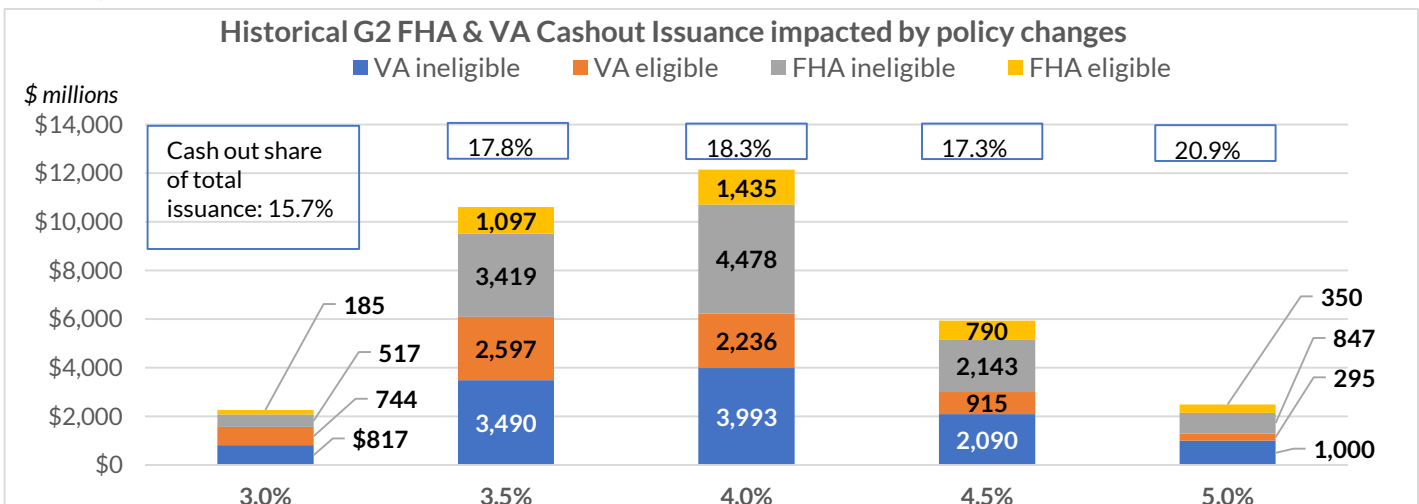
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HIGHLIGHTS

The Impact of Recent Policy Changes on Cash-Out Issuances

On August 1st 2019, the US Department of Housing and Urban Development (HUD) announced a policy change, reducing the maximum loan-to-value (LTV) ratio for FHA-insured cash-out refinance mortgages from 85 percent to 80 percent. This change would be effective September 1st 2019. According to HUD, this change would strengthen the equity position of future cash-out refinances and reduce loss severities in the event of default. In another related policy revision, on the same date Ginnie Mae announced that effective November 1, 2019 MBS pools, VA cash-out refinance loans with LTVs greater than 90 percent would generally be ineligible for Ginnie Mae I Single Issuer Pools and Ginnie Mae II Multiple Issuer Pools.

Because FHA and VA mortgages are packaged into Ginnie Mae securities, these changes will have some impact on Ginnie Mae issuance volumes moving forward. The below chart provides a perspective that helps to understand the magnitude of this change. This chart shows the total FHA and VA cash-out refinance issuance in TBA eligible Multiple Issuer Pools from Jan to July 2019 broken out by MBS coupon. For each coupon, it also shows the portion of FHA and VA volume that would be ineligible had the new policies been in effect from Jan to July.



Source: Ginnie Mae

Across all coupons, FHA and VA cash-out refinances comprised \$33.4 billion out of \$190 billion in total Ginnie Mae issuances from Jan to July 2019, roughly 17.6 percent. About 68 percent, or \$22.7 billion of the \$33.4 billion in cash-out refinance loans would be ineligible had the new policies been in effect. The \$22.7 billion represents 11.9% of the total \$190 billion in Ginnie Mae MBS issued during the January to July 2019 period.

This chart also shows the portion of historical cash-out issuance that would have been ineligible under the new policy. While all coupons would be impacted, the largest two – 3.5% and 4.0% – would be impacted the most. Specifically, \$6.9 billion out of the \$10.6 billion in 3.5% coupon and \$8.4 billion of the \$12.1 billion in the 4.0 coupon would have been ineligible had the new policy been in place from Jan to July 2019. Ineligible loans can only be pooled in non-TBA eligible Custom MBS pools under these new policies.

A further breakdown by agency shows a bigger impact on FHA cash-out issuances. In the 3.5% coupon, \$3.4 billion, or 78% of FHA's cash-out issuance of \$4.5 billion would have been ineligible. For same coupon VA, \$3.49 billion, or 57 percent, of \$6.1 billion issuance would be ineligible. In the 4 percent coupon, 75% of FHA's and 64% of VA's cash-out issuances from Jan to July 2019 would have been ineligible under the new policy. Thus, FHA and VA cash-outs would both be heavily impacted, but FHA more so than VA.

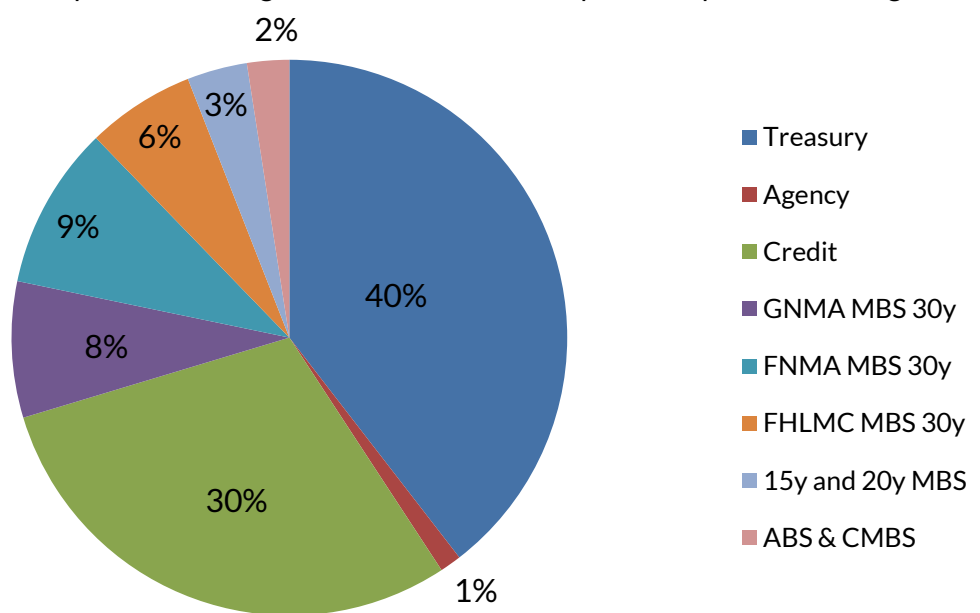
Highlights this month:

- Agency gross issuance was \$572 billion in the first half of 2019, down 1.7% from the same period in 2018 (page 17).
- Mortgage rates dropped to 3.6 percent in early August as measured by Freddie Mac's Primary Mortgage Market Survey, the lowest rate since 2016.
- The median DTI on Ginnie Mae originations continued to fall to 42.6 percent in June 2019, driven by falling interest rates (page 29).
- Nonbanks now hold over two thirds of Ginnie Mae mortgage servicing rights (page 40).

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

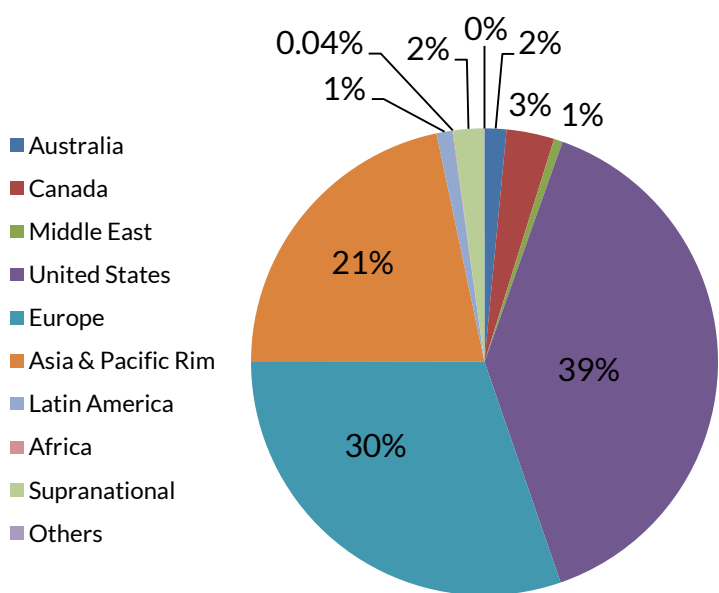
US MBS (Ginnie Mae, Fannie Mae, and Freddie Mac) comprise 27 percent of the Barclays US Aggregate Index- less than either the US Treasury share (40 percent) or the US Credit share (30 percent). Fannie Mae 30-year MBS comprises the largest percent of US MBS (9 percent), while Ginnie Mae 30-year MBS and Freddie Mac 30-year MBS comprise 8 percent and 6 percent of the market, respectively. Mortgages with terms of 15 and 20 years comprise the remaining balance (3 percent) of the US MBS share. US securities are the single largest contributor to the Barclays Global Aggregate, accounting for 39 percent of the global total. US MBS comprises 11 percent of the global aggregate.

Barclays US Aggregate Index



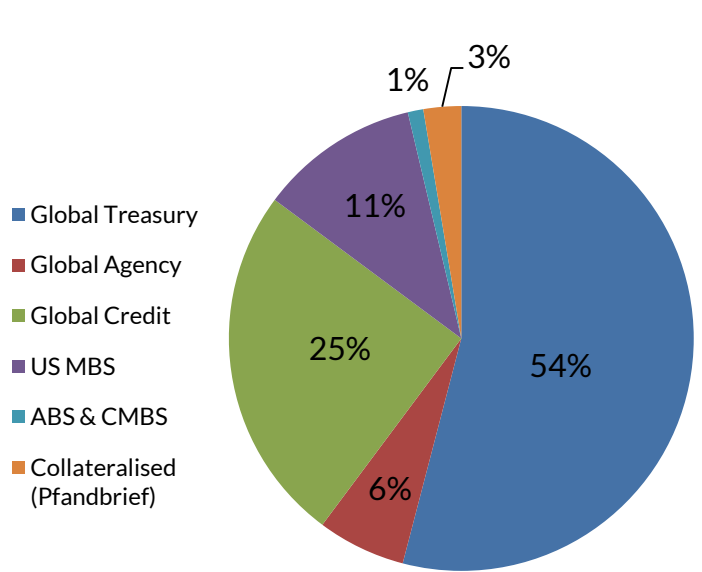
Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2019. Note: Numbers in chart may not add to 100 percent due to rounding.

Barclays Global Aggregate Index by Country



Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2019.

Barclays Global Aggregate Index by Sector

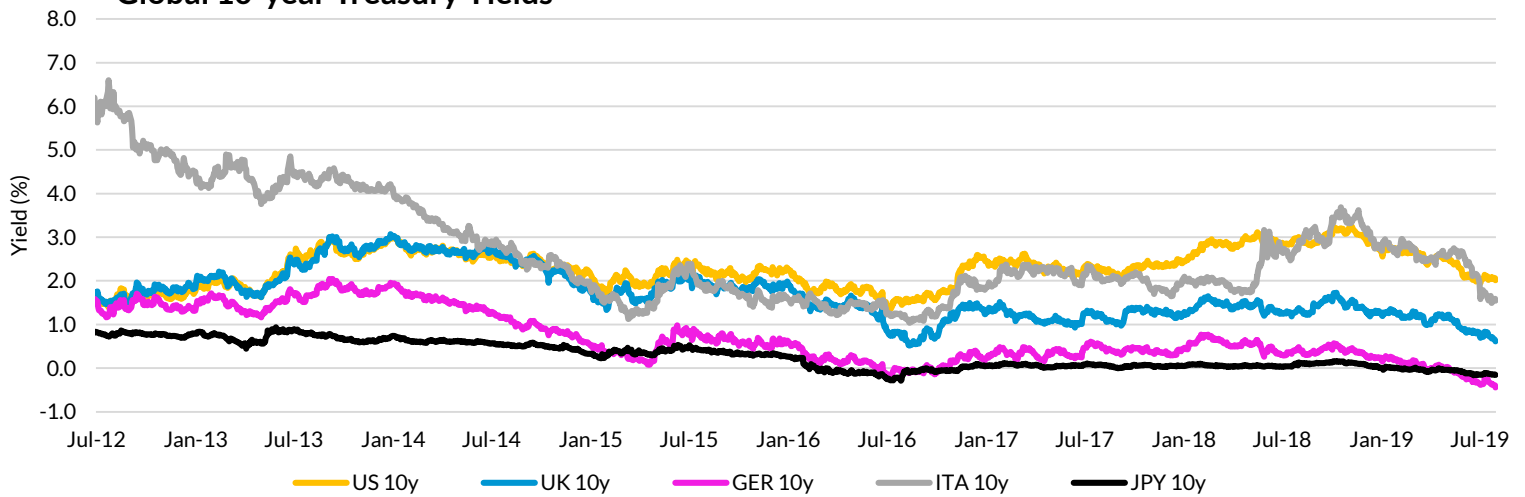


Sources: Bloomberg and State Street Global Advisors. Note: Data as of June 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

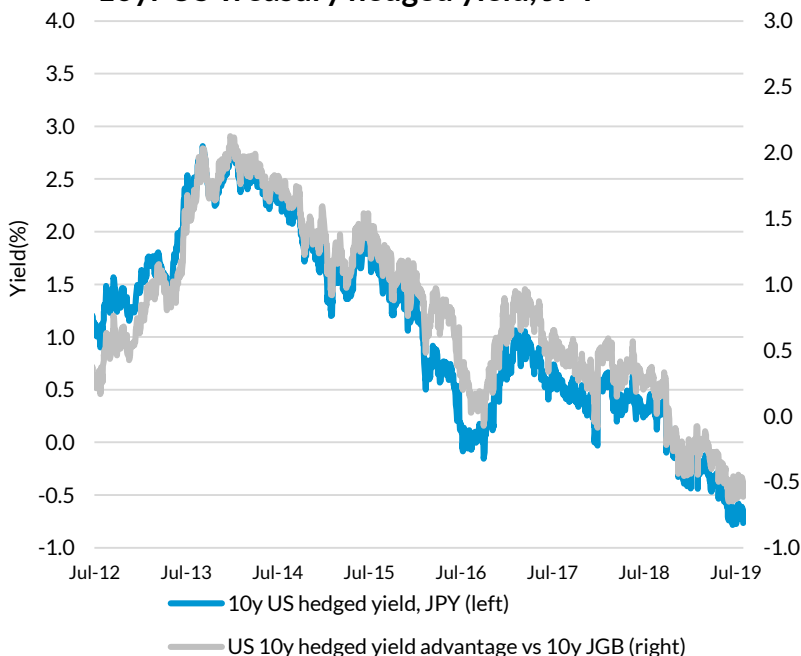
US 10-year Treasury yields have generally been the highest in the developed world over the past few years, but were neck-in-neck with Italy from August 2018 to June 2019. At the end of July 2019, the yield on the US 10-year note was 2.01 percent, unchanged since the end of June. Yield on the Italian 10-year note however fell dramatically by 56 basis points during the month to 1.54 percent. This likely reflects weakness in recent economic data and worries about tariffs and potential trade wars. It also reflects greater investor demand for Italian government bonds, which offer higher yield compared to their UK and German counterparts. In the UK and Germany, 10-year government bond yields decreased to 0.61 and -0.44 bps respectively. In Japan, yields increased slightly to -0.15 bps. At the end of July, the hedged yield differential between the 10-year Treasury and the 10-year JGB stood at -61 bps, a decrease of 10 bps since June. The hedged yield differential between the 10-year Treasury and the 10-year Bund stands at -57 bps, a decrease of 3 bps since the end of June.

Global 10-year Treasury Yields



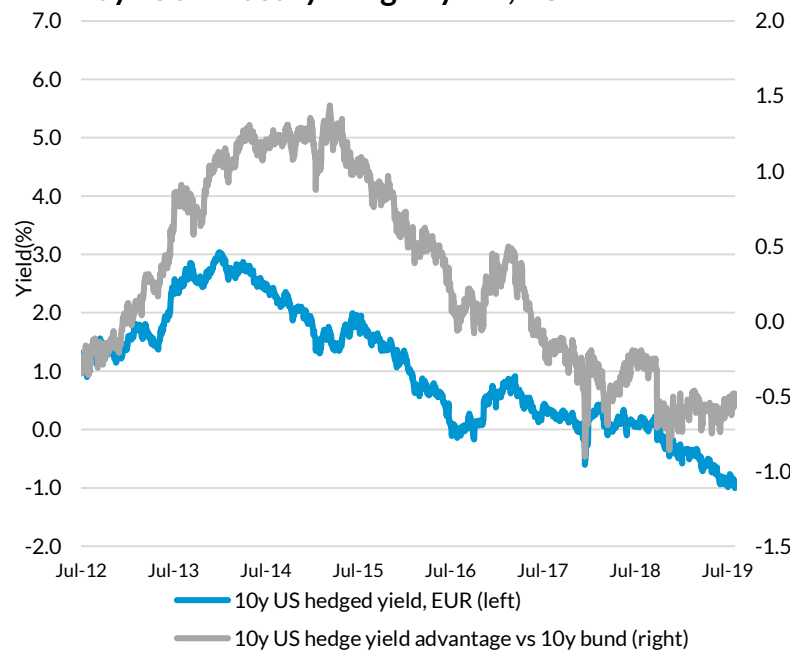
Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

10yr US Treasury hedged yield, JPY



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

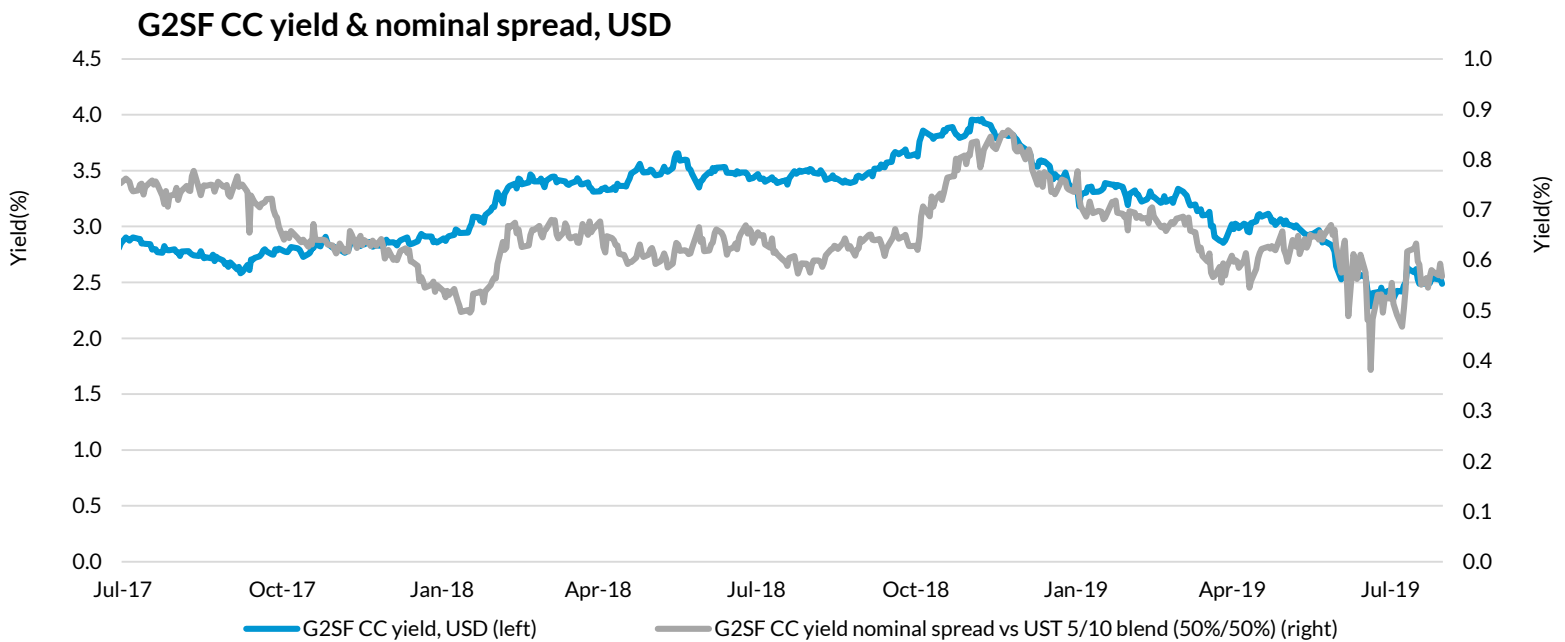
10yr US Treasury hedged yield, EUR



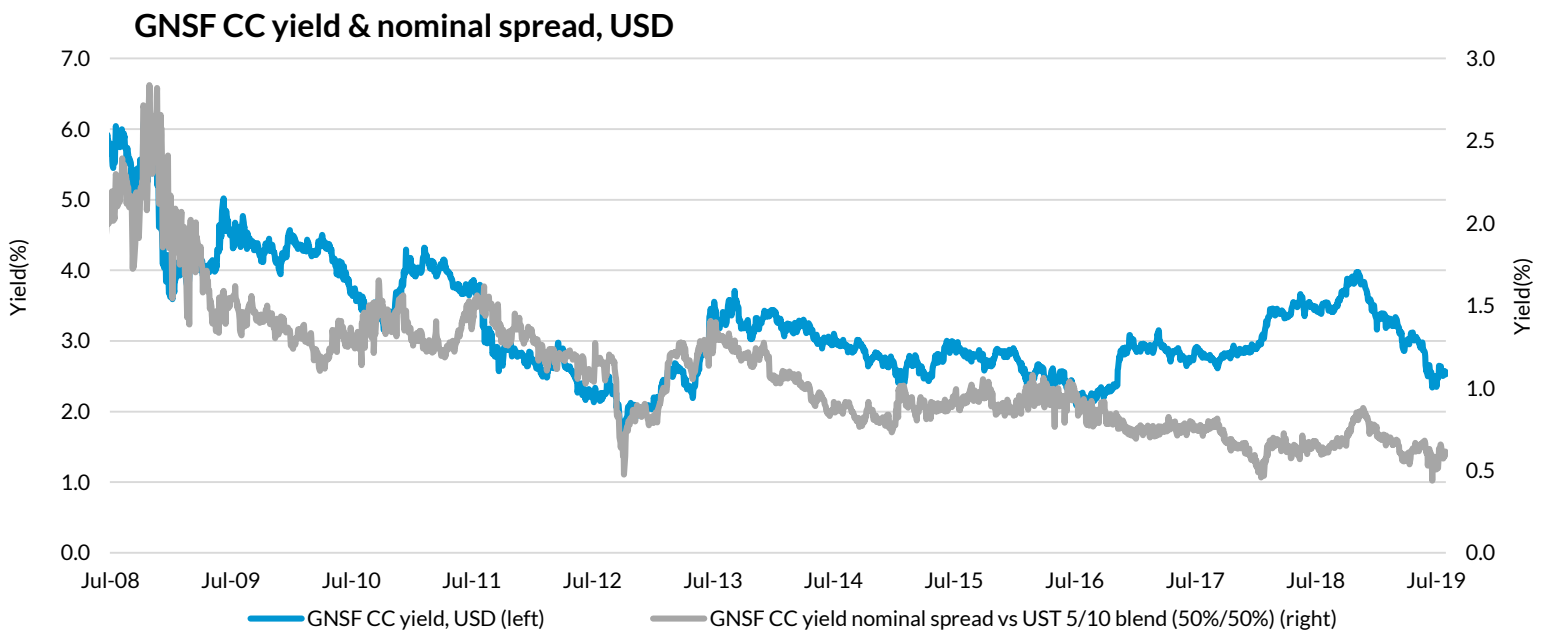
Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The nominal yield on both the current coupon GNMA II and GNMA I securities increased in July 2019. Current coupon Ginnie Mae securities outyielded their Treasury counterparts (relative to the average of 5- and 10-year Treasury yields) by 57 and 61 bps on G2SF and GNSF, respectively, a widening of 4 and 7 bps since last month.



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

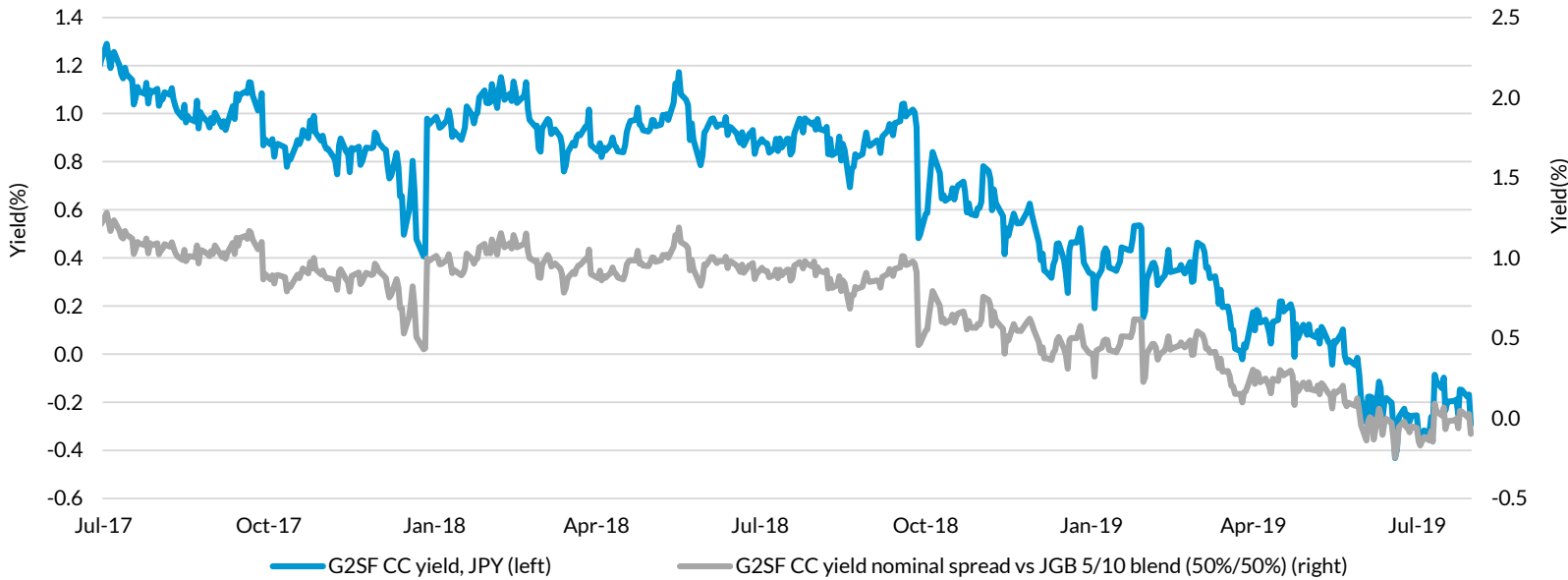


Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

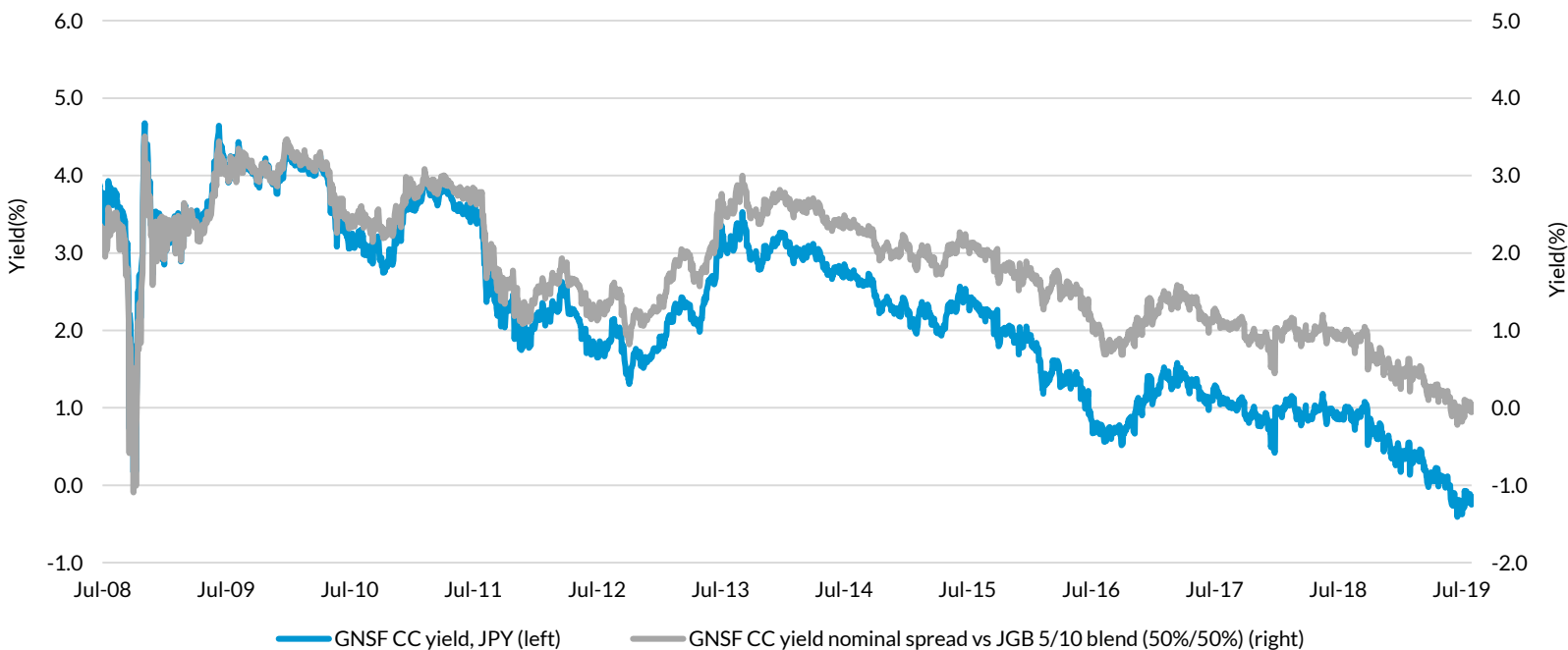
If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus many sovereign alternatives. The figures below show that current coupon G2SF and GNSF hedged into Japanese yen have a marginally lower yield than the JGB 5/10 blend by 10 and 6 bps respectively at the end of July. The past three months are the first time this yield spread has been negative since 2007.

G2SF CC yield & nominal spread, JPY



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

GNSF CC yield & nominal spread, JPY

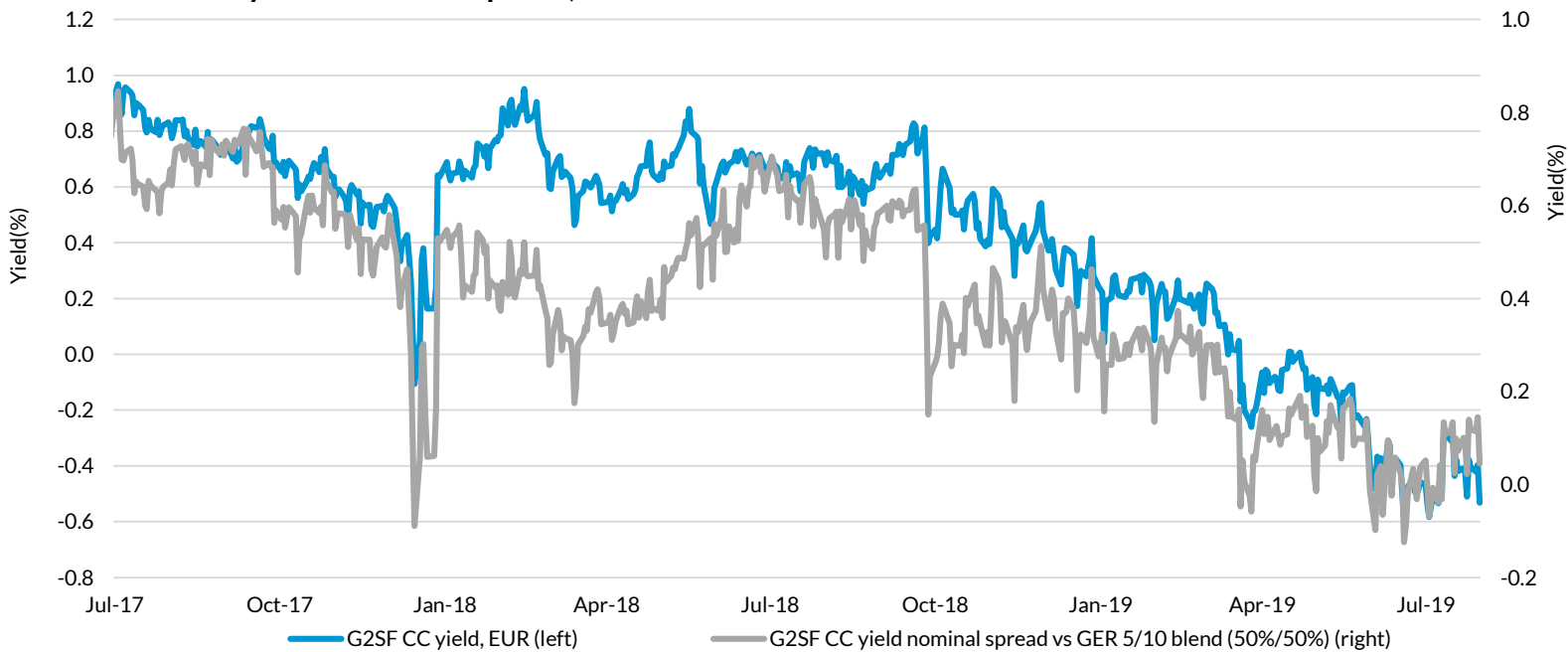


Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

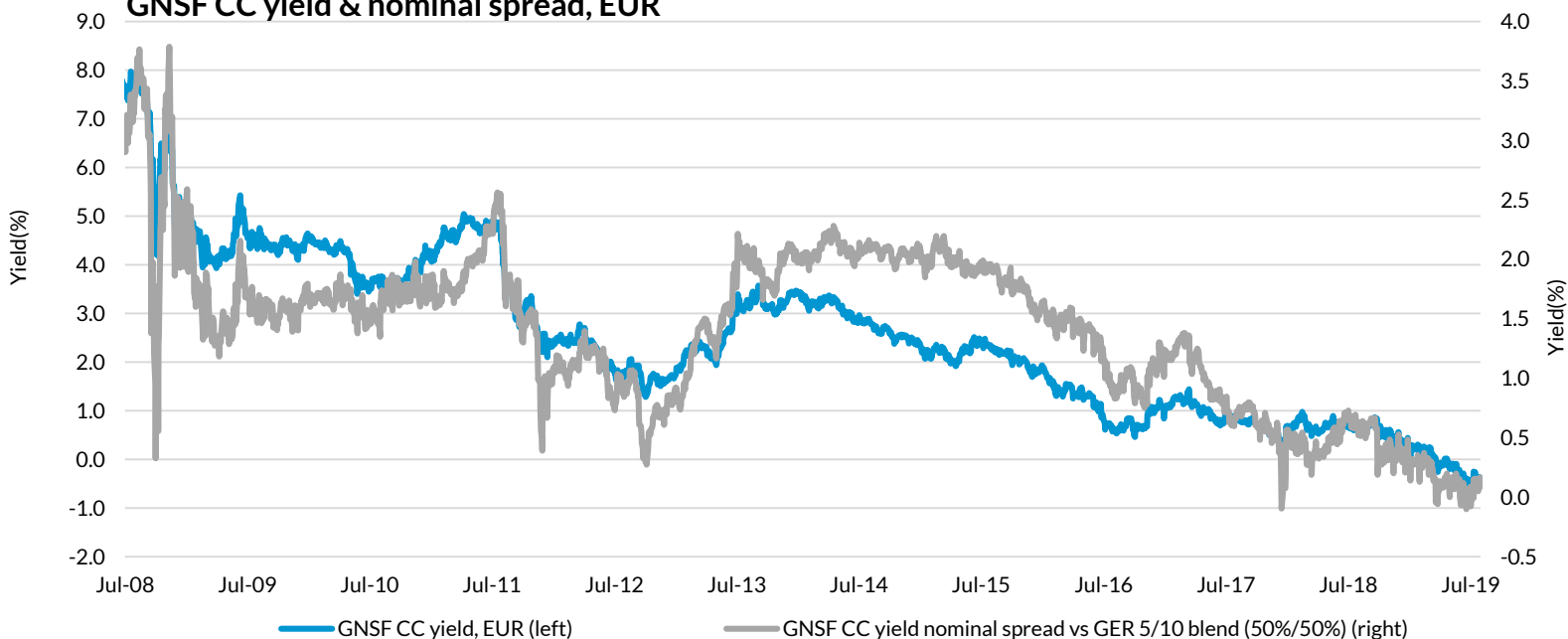
If Ginnie Mae securities are hedged into foreign currencies, they look fair on a yield basis versus sovereign alternatives. The figures below show that at the end of July, the current coupon G2SF has a 5 bp higher yield than the than the average of the German 5/10 blend, while the GNSF hedged into euros has a spread to the German 5/10 blend of 9 bps. This represents a 1 and 4 bp increase for each respectively since the end of June.

G2SF CC yield & nominal spread, EUR



Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

GNSF CC yield & nominal spread, EUR

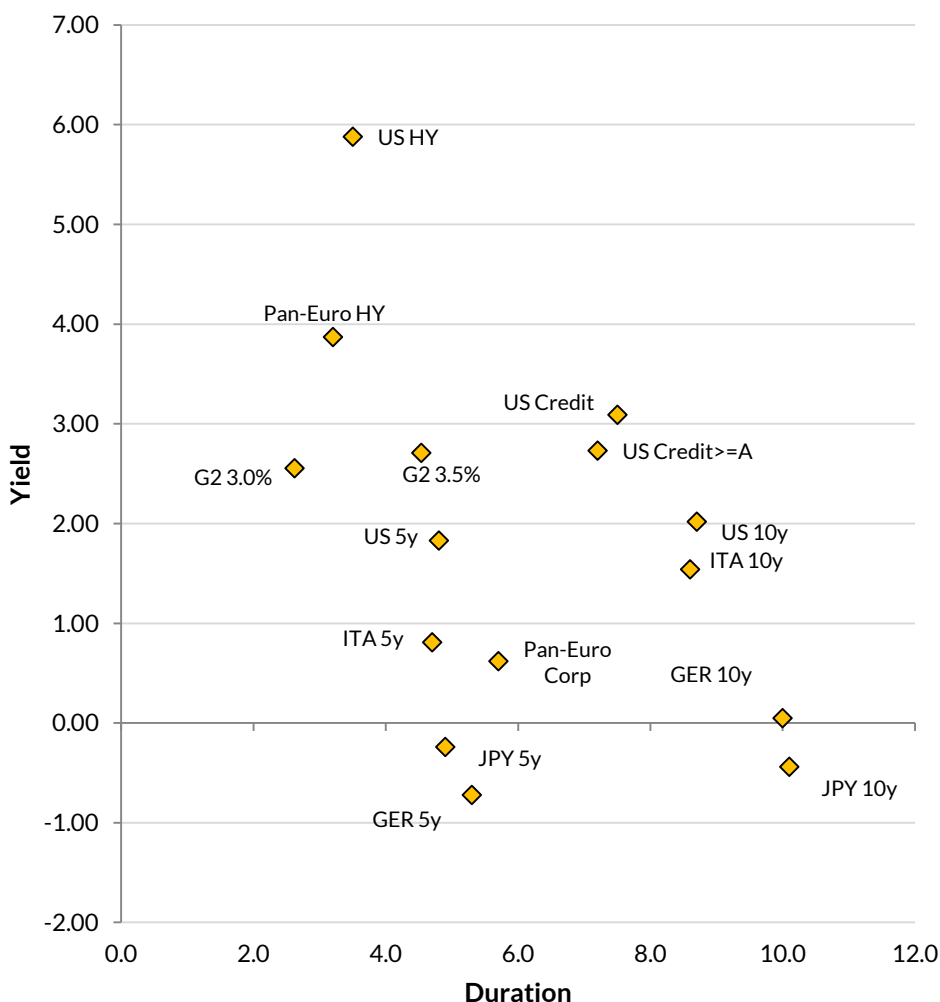


Sources: Bloomberg and State Street Global Advisors. Note: Data as of July 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

US MBS yields are about the same or higher than most securities with the same or longer durations. The only asset class with significantly more yield is the US high yield index. Duration, a measure of sensitivity to interest rate changes, does not fully capture the volatility of the high yield asset classes, as there is a large credit component.

Yield versus duration



Security	Duration	Yield
US 5y	4.8	1.83
US 10y	8.7	2.02
GNMA II 3.0%	5.1	2.56
GNMA II 3.5%	4.3	2.71
JPY 5y	4.9	-0.24
JPY 10y	10.0	0.05
GER 5y	5.3	-0.72
GER 10y	10.1	-0.44
ITA 5y	4.7	0.81
ITA 10y	8.6	1.54
US credit	7.5	3.09
US credit >= A	7.2	2.73
US HY	3.5	5.88
Pan-Euro Corp	5.7	0.62
Pan-Euro HY	3.2	3.87

Sources: Bloomberg and State Street Global Advisors. Note: Yields are in base currency of security and unhedged. Data as of July 2019.

Relative Attractiveness of US Fixed Income and Ginnie Mae MBS

The average return on the Ginnie Mae index over the past decade has been slightly higher than the US Treasury index. However, the standard deviation of the Ginnie Mae index is the lowest of any sector, as it has the least price volatility over a 1, 3, 5 and 10 year horizon. The result: The Sharpe Ratio, or excess return per unit of risk over the 10-year horizon is only marginally lower than most of the corporate indices, although a good bit higher than the US Treasury Index.

Average Return (Per Month)

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.52	0.61	0.84	0.50	0.57	0.39
3 year	0.17	0.10	0.30	0.17	0.55	0.38
5 year	0.21	0.21	0.35	0.26	0.43	0.35
10 year	0.27	0.25	0.47	0.43	0.71	0.78

Average Excess Return (Per Month)

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.33	0.43	0.65	0.56	0.39	0.44
3 year	0.05	-0.02	0.18	0.23	0.43	0.45
5 year	0.13	0.13	0.27	0.31	0.35	0.40
10 year	0.23	0.21	0.43	0.45	0.67	0.80

Standard Deviation

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield*	Pan Euro High Yield*
1 year	0.78	1.08	1.24	0.84	1.85	1.52
3 year	0.67	0.96	1.08	0.78	1.22	1.08
5 year	0.58	0.98	1.15	0.99	1.58	1.34
10 year	0.68	1.01	1.17	1.14	1.76	1.76

Sharpe Ratio

Time Period	US MBS Ginnie Mae	US Treasury	US Credit Corp	Pan Euro Credit Corp	US High Yield	Pan Euro High Yield*
1 year	0.43	0.39	0.52	0.66	0.21	0.29
3 year	0.07	-0.02	0.17	0.29	0.36	0.41
5 year	0.23	0.14	0.24	0.32	0.22	0.30
10 year	0.33	0.21	0.36	0.39	0.38	0.45

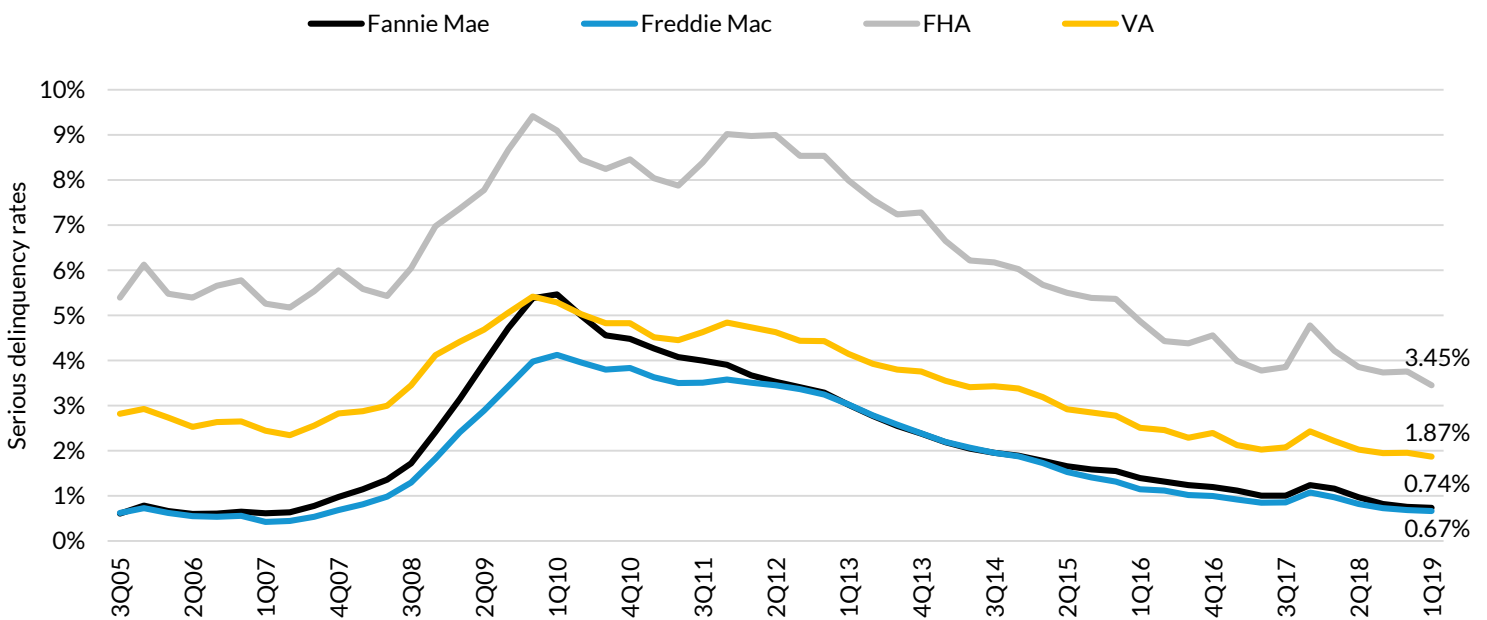
*Assumes 2% capitalization max per issuer on high yield indices

Sources: Barclays Indices, Bloomberg and State Street Global Advisors Note: Data as of July 2019.

State of the US Housing Market

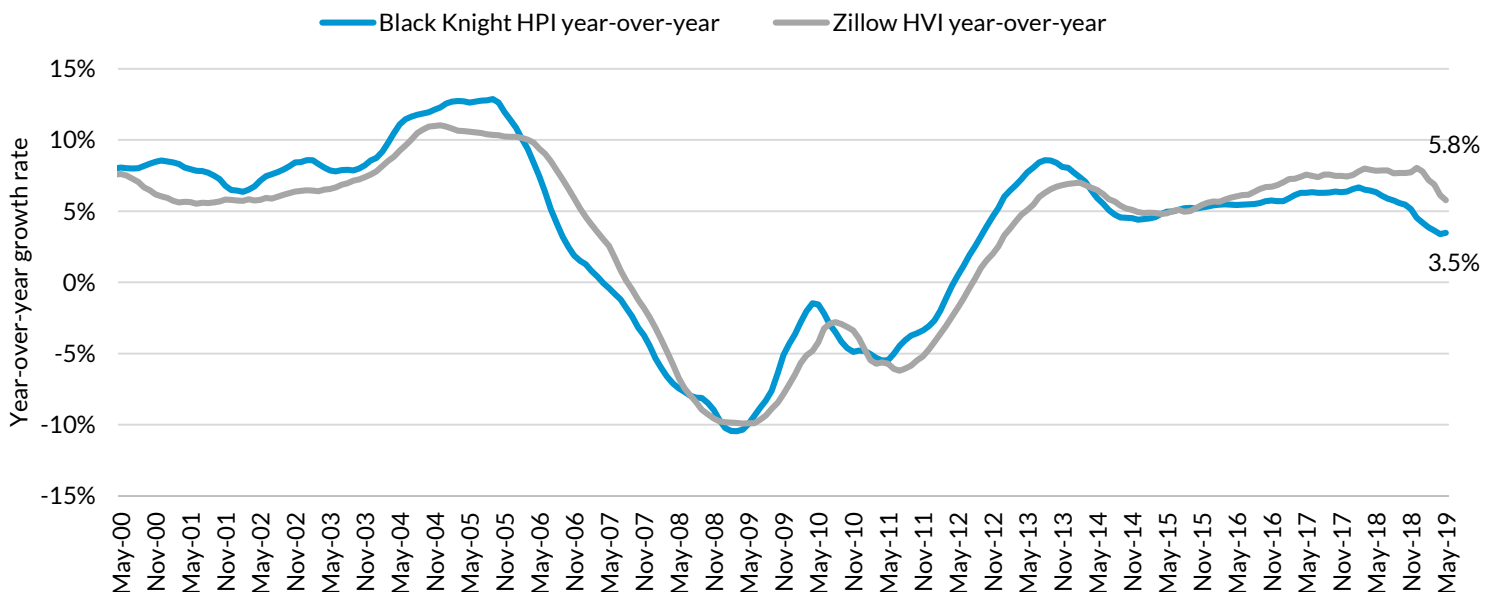
Serious delinquencies rates for single-family GSE loans, FHA loans, and VA loans declined in Q1 2019. GSE delinquencies remain slightly higher relative to 2006-2007, while FHA and VA delinquencies (which are higher than their GSE counterparts) are at levels lower than 2006-2007. After touching 6.5 percent in early 2018, year-over-year house price appreciation has slowed considerably in recent months. It stood at 3.5 percent in May 2019 per Black Knight's repeat sales index and at 5.8 percent per Zillow's hedonic index.

Serious Delinquency Rates: Single-Family Loans



Sources: Fannie Mae, Freddie Mac, MBA Delinquency Survey and Urban Institute.
 Note: Serious delinquency is defined as 90 days or more past due or in the foreclosure process. Data as of Q1 2019.

National Year-Over-Year HPI Growth



Sources: Black Knight, Zillow, and Urban Institute. Note: Data as of May 2019.

State of the US Housing Market

Nationally, nominal home prices have increased by 53.0 percent since the trough, and now exceed their pre-crisis peak valuation on a nominal basis by 13.9 percent. The picture is very different across states, with many states well in excess of the prior peak, while a number of states remain more than 9 percent below peak levels: Connecticut (13.1% below), Florida (9.9% below), Nevada (9.4% below), and Maryland (9.1% below).

State	HPI Changes			YOY	Current HPI % Above Peak
	2000 to Peak	Peak to Trough	Trough to Current		
National	75.6%	-25.6%	53.0%	3.5%	13.9%
Alabama	44.0%	-15.4%	30.3%	5.6%	10.3%
Alaska	69.5%	-3.2%	22.9%	1.5%	19.0%
Arizona	110.2%	-48.0%	79.0%	5.8%	-6.8%
Arkansas	41.8%	-10.7%	25.2%	3.4%	11.8%
California	155.3%	-43.4%	89.6%	1.3%	7.4%
Colorado	40.2%	-12.7%	79.8%	4.1%	56.9%
Connecticut	92.4%	-24.6%	15.4%	2.0%	-13.1%
Delaware	94.9%	-23.5%	27.1%	1.7%	-2.8%
District of Columbia	175.4%	-13.5%	55.5%	2.0%	34.5%
Florida	129.1%	-47.0%	69.9%	4.1%	-9.9%
Georgia	38.3%	-32.0%	65.0%	4.9%	12.2%
Hawaii	162.1%	-22.1%	49.8%	2.4%	16.6%
Idaho	71.6%	-28.5%	80.2%	10.7%	28.9%
Illinois	61.6%	-34.6%	40.9%	2.3%	-7.8%
Indiana	21.3%	-7.7%	33.8%	5.1%	23.5%
Iowa	28.3%	-5.0%	26.4%	3.0%	20.0%
Kansas	34.7%	-9.3%	39.5%	3.1%	26.5%
Kentucky	29.5%	-7.7%	35.6%	5.1%	25.2%
Louisiana	48.8%	-5.1%	24.1%	2.8%	17.8%
Maine	82.4%	-12.5%	32.3%	2.5%	15.7%
Maryland	129.4%	-28.6%	27.3%	1.6%	-9.1%
Massachusetts	92.6%	-22.8%	54.8%	3.7%	19.5%
Michigan	24.1%	-39.7%	77.3%	4.7%	6.9%
Minnesota	66.2%	-27.7%	55.0%	3.7%	12.1%
Mississippi	41.1%	-13.7%	23.6%	1.8%	6.7%
Missouri	42.8%	-14.7%	33.6%	7.0%	14.0%
Montana	80.9%	-10.7%	48.2%	4.4%	32.3%
Nebraska	26.5%	-6.8%	39.5%	3.2%	30.0%
Nevada	126.9%	-59.4%	122.9%	5.8%	-9.4%
New Hampshire	90.6%	-23.5%	39.5%	4.4%	6.6%
New Jersey	118.0%	-27.9%	26.2%	2.2%	-9.0%
New Mexico	66.9%	-16.1%	22.7%	4.4%	3.0%
New York	98.8%	-15.2%	38.9%	2.9%	17.8%
North Carolina	40.6%	-15.6%	35.6%	4.9%	14.5%
North Dakota	54.1%	-4.0%	54.7%	0.6%	48.6%
Ohio	21.1%	-18.4%	29.7%	-0.3%	5.9%
Oklahoma	37.5%	-2.3%	19.0%	3.4%	16.3%
Oregon	82.4%	-28.0%	78.9%	3.7%	28.9%
Pennsylvania	70.3%	-11.7%	24.9%	4.2%	10.3%
Rhode Island	131.3%	-34.5%	49.5%	4.4%	-2.0%
South Carolina	44.9%	-19.4%	34.3%	4.4%	8.3%
South Dakota	45.1%	-4.0%	44.7%	5.3%	39.0%
Tennessee	35.3%	-11.8%	44.0%	6.0%	27.0%
Texas	33.3%	-5.8%	51.0%	3.3%	42.3%
Utah	54.4%	-21.8%	73.4%	7.5%	35.6%
Vermont	83.5%	-7.5%	30.2%	5.0%	20.5%
Virginia	99.5%	-22.7%	26.8%	3.0%	-2.0%
Washington	85.4%	-28.7%	87.1%	3.7%	33.5%
West Virginia	43.0%	-6.0%	21.7%	4.5%	14.5%
Wisconsin	44.8%	-16.2%	35.2%	4.2%	13.3%
Wyoming	77.2%	-5.7%	28.4%	4.9%	21.0%

Sources: Black Knight and Urban Institute. Note: HPI data as of May 2019. Negative sign indicates that state is above earlier peak. Peak refers to the month when HPI reached the highest level for each state/US during the housing boom period, ranging from 09/2005 to 09/2008. Trough represents the month when HPI fell to the lowest level for each state/US after the housing bust, ranging from 01/2009 to 03/2012. Current is 05/2019, the latest HPI data period.

State of the US Housing Market

Ginnie Mae MBS constitute 30.4 percent of outstanding agency issuance by loan balance and 33.0 percent of new issuance over the past year. However, the Ginnie Mae share varies widely across states, with the share of outstanding (by loan balance) as low as 15.9 percent in the District of Columbia and as high as 51.4 percent in Alaska. In general, the Ginnie Mae share is higher in states with lower home prices.

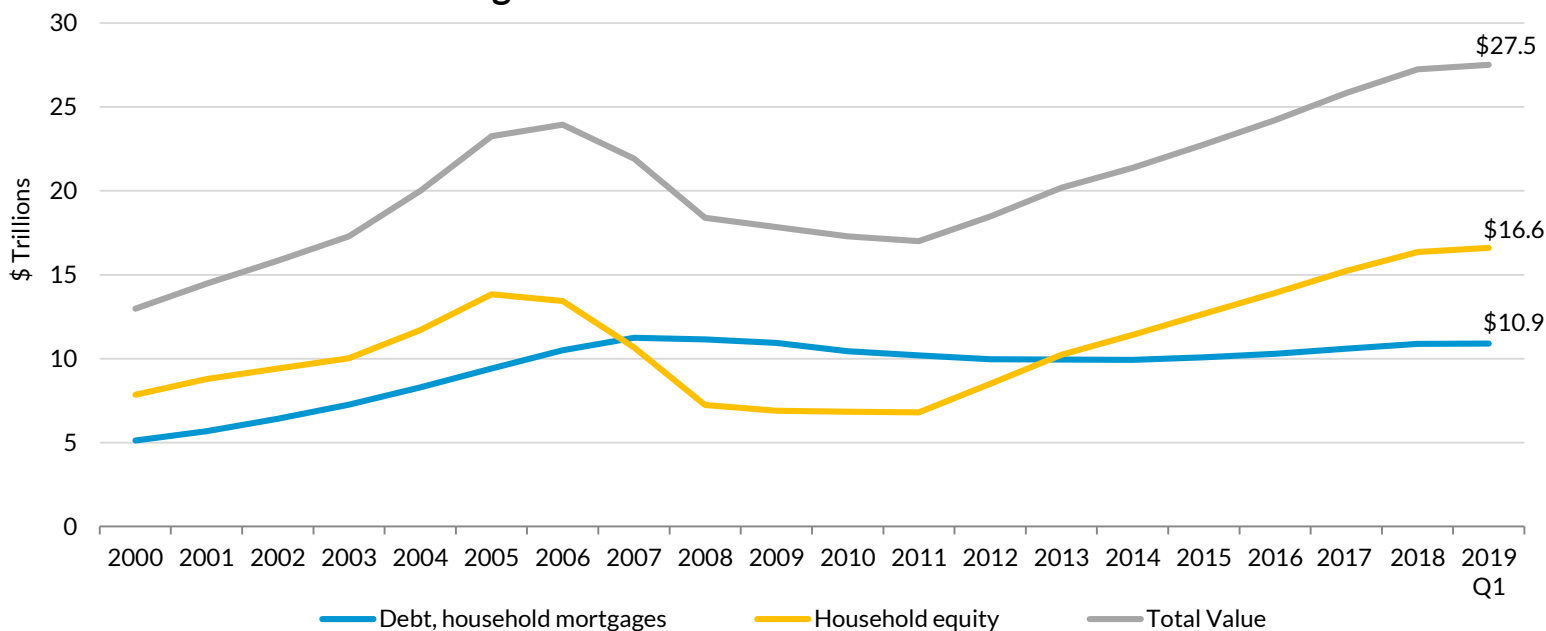
State	Agency Issuance (past 1 year)			Agency Outstanding		
	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)	Ginnie Mae Share	Ginnie Mae Average Loan Size (Thousands)	GSE Average Loan Size (Thousands)
National	33.0%	219.7	235.1	30.4%	165.2	188.0
Alabama	43.7%	167.5	189.1	44.7%	128.8	151.6
Alaska	51.6%	284.4	254.0	51.4%	233.5	198.7
Arizona	31.8%	222.0	224.5	31.1%	166.4	178.5
Arkansas	43.1%	146.4	171.1	44.2%	111.0	137.3
California	27.7%	357.5	341.5	20.9%	269.8	267.1
Colorado	32.0%	302.6	289.4	26.9%	220.2	224.9
Connecticut	31.7%	217.7	228.7	29.5%	183.6	188.4
Delaware	37.4%	219.4	229.1	36.2%	180.7	184.1
District of Columbia	18.1%	422.9	364.2	15.9%	302.6	302.1
Florida	39.9%	214.3	213.8	35.0%	165.7	170.8
Georgia	39.7%	191.7	214.9	38.3%	143.4	169.7
Hawaii	38.9%	500.6	402.6	30.4%	391.7	316.0
Idaho	32.2%	215.0	216.9	31.5%	155.1	166.4
Illinois	26.3%	180.4	201.5	24.6%	141.9	160.4
Indiana	36.9%	147.5	162.9	37.5%	111.6	126.1
Iowa	27.5%	148.4	166.0	25.7%	114.4	131.3
Kansas	35.9%	158.3	179.0	35.4%	120.7	138.8
Kentucky	39.2%	153.6	170.8	38.8%	122.0	132.5
Louisiana	42.4%	172.8	195.3	41.7%	137.4	158.8
Maine	34.9%	189.1	206.2	32.4%	153.4	160.0
Maryland	43.5%	287.3	269.1	39.2%	233.0	218.6
Massachusetts	24.5%	301.9	290.3	19.3%	237.7	227.7
Michigan	25.1%	152.2	174.0	25.1%	114.0	134.6
Minnesota	24.1%	205.6	217.6	23.9%	157.0	170.5
Mississippi	50.4%	157.0	176.1	50.2%	120.4	141.8
Missouri	35.2%	157.1	176.3	34.7%	121.2	138.9
Montana	29.6%	225.5	229.0	29.4%	170.4	176.5
Nebraska	32.3%	170.2	176.0	32.9%	123.2	137.8
Nevada	34.4%	261.8	243.7	34.7%	188.5	191.4
New Hampshire	31.6%	241.9	231.4	29.1%	194.2	180.9
New Jersey	29.3%	258.0	270.3	27.2%	211.6	218.6
New Mexico	41.6%	185.1	192.9	42.2%	141.5	152.9
New York	25.0%	251.9	278.2	25.1%	187.1	214.8
North Carolina	34.0%	187.9	210.5	33.6%	141.9	166.1
North Dakota	31.6%	214.6	207.4	26.2%	168.1	165.9
Ohio	34.4%	147.2	159.6	35.7%	113.0	126.5
Oklahoma	44.9%	157.5	176.1	47.6%	119.3	140.1
Oregon	27.3%	268.6	268.2	23.4%	200.1	207.3
Pennsylvania	31.9%	169.7	197.5	32.4%	137.1	158.2
Rhode Island	38.4%	237.8	228.5	33.6%	188.6	182.3
South Carolina	39.2%	190.9	199.4	37.2%	147.7	160.7
South Dakota	37.6%	180.1	190.2	35.6%	143.7	149.6
Tennessee	39.6%	191.0	207.3	39.5%	139.4	164.1
Texas	34.1%	203.1	221.0	35.3%	142.7	175.1
Utah	27.9%	257.5	265.6	27.5%	191.9	207.4
Vermont	22.6%	191.3	203.0	20.0%	165.8	159.7
Virginia	44.3%	273.9	264.6	40.9%	223.2	216.3
Washington	30.8%	301.0	300.5	27.4%	220.2	228.3
West Virginia	48.8%	157.1	157.9	45.8%	126.8	127.0
Wisconsin	22.1%	173.2	181.4	20.7%	134.5	141.3
Wyoming	41.4%	219.7	219.2	39.9%	178.2	176.0

Sources: eMBS and Urban Institute. Note: Ginnie Mae outstanding share are based on loan balance as of June 2019. Ginnie Mae issuance is based on the last 12 months, from June 2018 to June 2019.

State of the US Housing Market

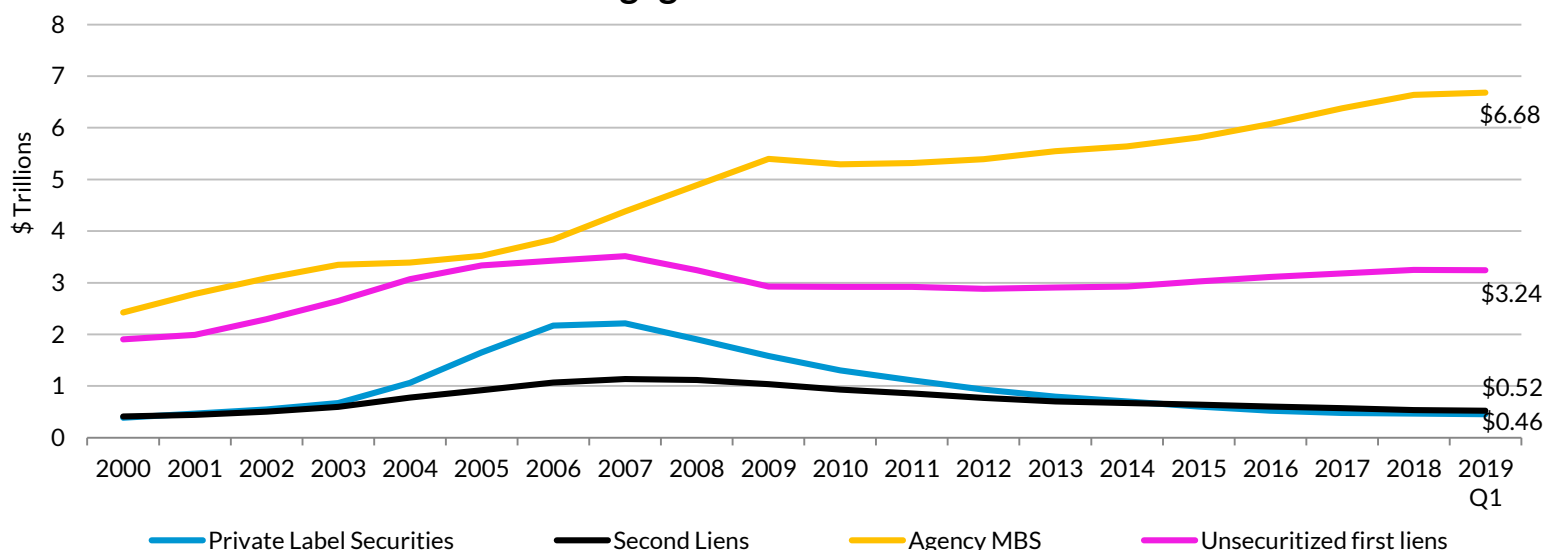
The Federal Reserve's Flow of Funds report has consistently indicated an increasing total value of the housing market driven by growing household equity since 2012, and 2019 Q1 was no different. Total mortgage debt outstanding increased slightly to \$10.9 trillion and household equity increased slightly to \$16.6 trillion, bringing the total value of the housing market to \$27.5 trillion, 15 percent higher than the pre-crisis peak in 2006. Agency MBS make up 61.3 percent of the total mortgage market, private-label securities make up 4.2 percent, and unsecuritized first liens at the GSEs, commercial banks, savings institutions, and credit unions make up 29.7 percent. Second liens comprise the remaining 4.8 percent of the total.

Value of the US Housing Market



Sources: Federal Reserve Flow of Funds and Urban Institute. Data as of Q1 2019.

Size of the US Residential Mortgage Market



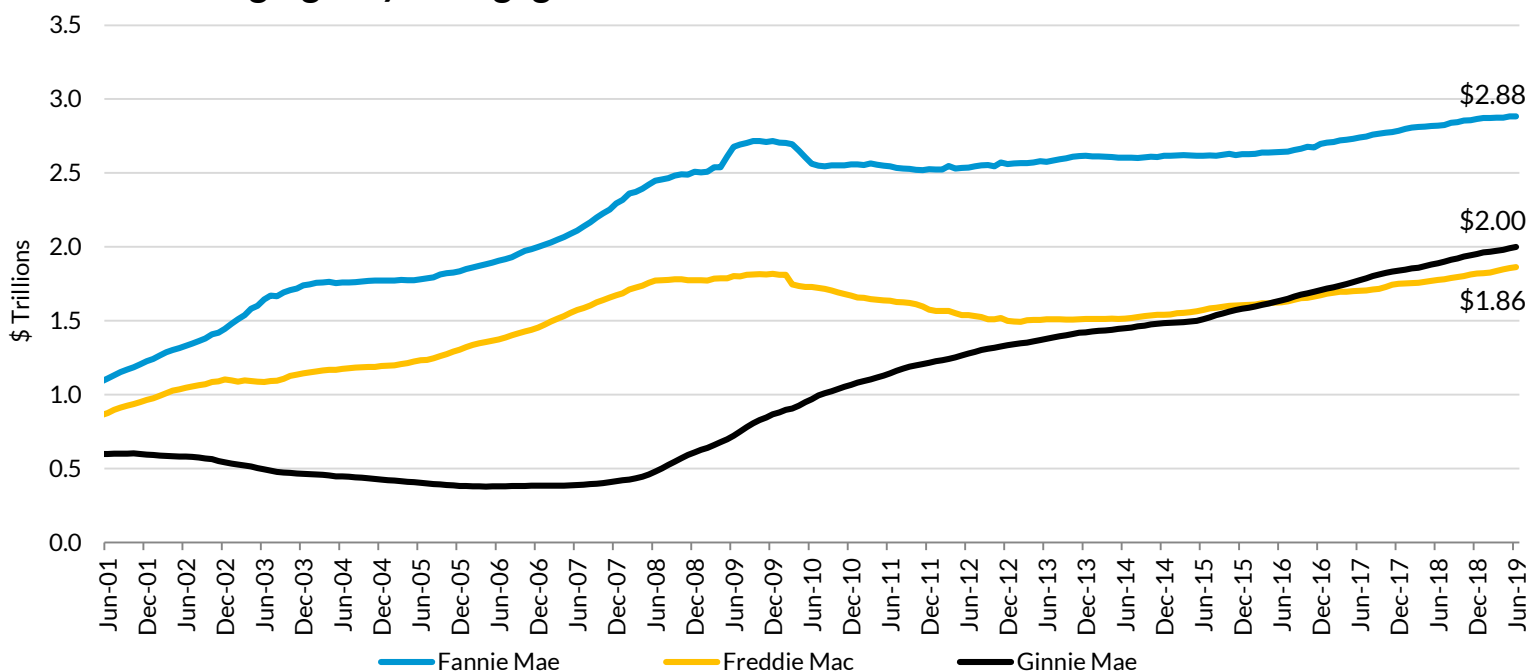
Sources: Federal Reserve Flow of Funds, Inside Mortgage Finance, eMBS and Urban Institute.

Note: Unsecuritized first liens includes loans held by commercial banks, GSEs, savings institutions, and credit unions. Data as of Q1 2019.

State of the US Housing Market

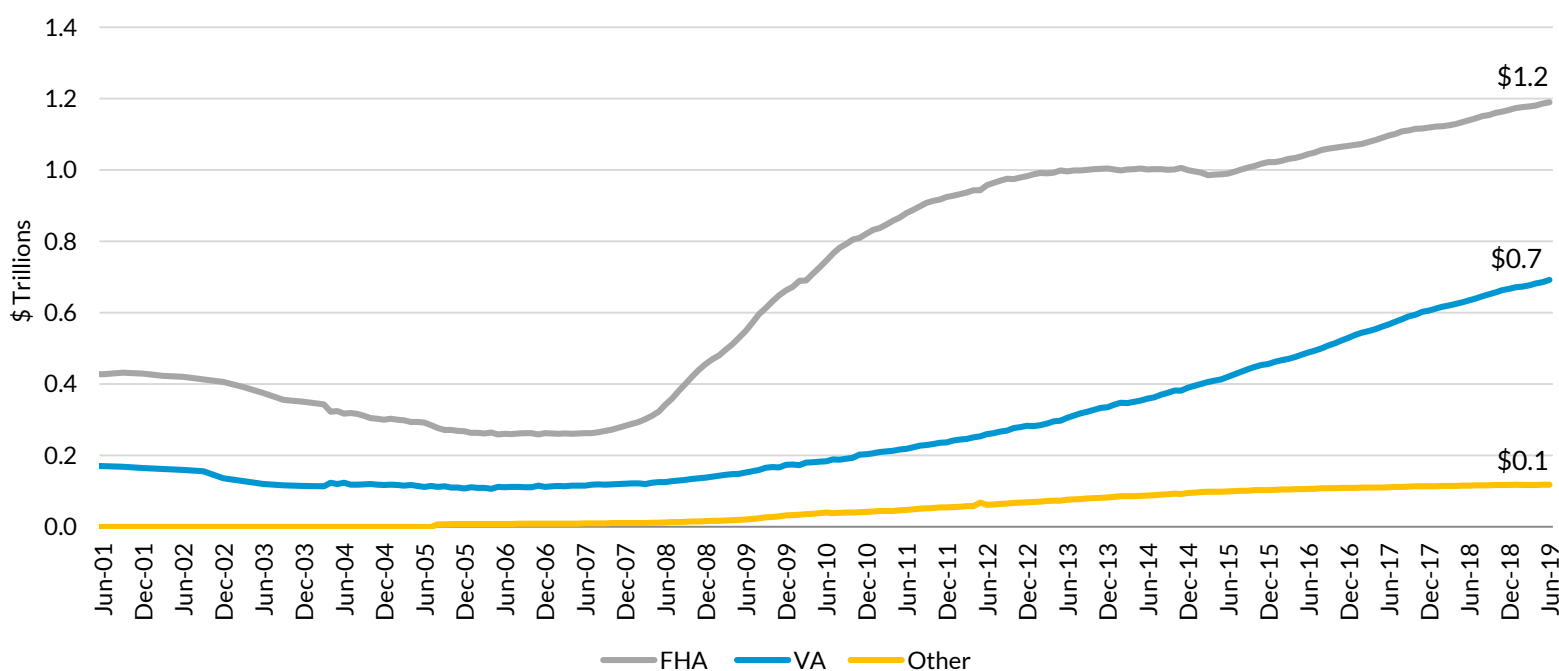
As of June 2019, outstanding securities in the agency market totaled \$6.75 trillion: 42.7 percent Fannie Mae, 27.6 percent Freddie Mac, and 29.6 percent Ginnie Mae MBS. Ginnie Mae has more outstandings than Freddie Mac. Within the Ginnie Mae market, both FHA and VA have grown very rapidly post-crisis. FHA comprises 59.5 percent of total Ginnie Mae MBS outstanding, while VA comprises 34.6 percent.

Outstanding Agency Mortgage-Backed Securities



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Outstanding Ginnie Mae Mortgage-Backed Securities

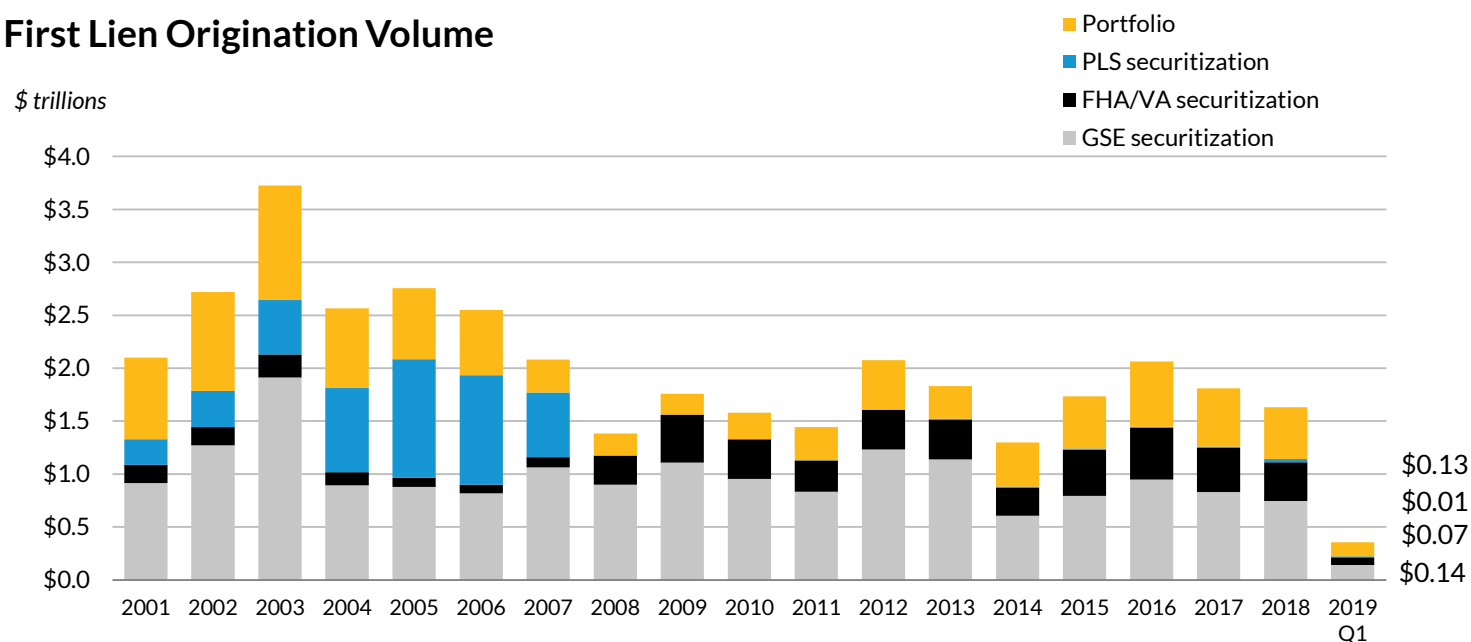


Sources: eMBS and Urban Institute. Note: Data as of June 2019.

State of the US Housing Market

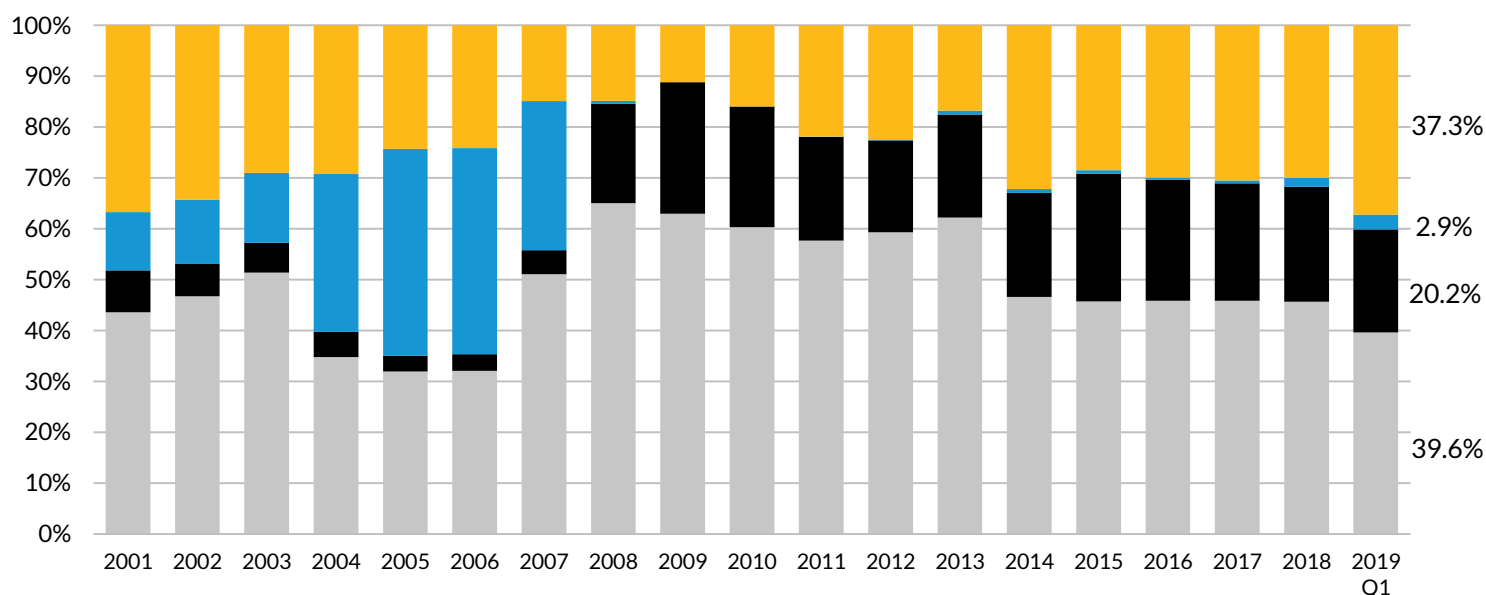
In the first quarter of 2019, first lien originations totaled \$355 billion, down slightly from \$380 billion in Q1 2018. The share of portfolio originations was 37.3 percent in Q1 2019, up significantly from 29.0 percent in the same period of 2018. The GSE share was down at 37.3 percent, compared to 46.3 percent in Q1 2018. The FHA/VA share fell slightly, at 20.2 percent compared to 22.9 percent in the same period last year. Private-label securitization at 2.9 percent was relatively high compared to the share of 1.6 percent one year ago and 0 percent ten years ago, but remains a fraction of its share in the pre-bubble years.

First Lien Origination Volume



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2019.

First Lien Origination Share



Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2019.

US Agency Market, Originations

Agency gross issuance was \$572.0 billion in the first six months of 2019, down 1.7 percent compared to the same period in 2018. Ginnie Mae gross issuance was down by 2.4 percent and GSE gross issuance was down by 1.4 percent. Within the Ginnie Mae market, FHA was up by 0.5 percent and VA origination was down by 3.9 percent. The decline in origination volume is the result of lower origination volumes in January and February 2019, versus the same period a year earlier, as well as Ginnie Mae and VA actions to curb rapid VA refinancing speeds.

Issuance Year	Agency Gross Issuance				
	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	\$202.8	\$157.9	\$360.6	\$102.2	\$462.8
2001	\$506.9	\$378.2	\$885.1	\$171.5	\$1,056.6
2002	\$710.0	\$529.0	\$1,238.9	\$169.0	\$1,407.9
2003	\$1,174.4	\$700.5	\$1,874.9	\$213.1	\$2,088.0
2004	\$517.5	\$355.2	\$872.6	\$119.2	\$991.9
2005	\$514.1	\$379.9	\$894.0	\$81.4	\$975.3
2006	\$500.2	\$352.9	\$853.0	\$76.7	\$929.7
2007	\$633.0	\$433.3	\$1,066.2	\$94.9	\$1,161.1
2008	\$562.7	\$348.7	\$911.4	\$267.6	\$1,179.0
2009	\$817.1	\$462.9	\$1,280.0	\$451.3	\$1,731.3
2010	\$626.6	\$377.0	\$1,003.5	\$390.7	\$1,394.3
2011	\$578.2	\$301.2	\$879.3	\$315.3	\$1,194.7
2012	\$847.6	\$441.3	\$1,288.8	\$405.0	\$1,693.8
2013	\$749.9	\$426.7	\$1,176.6	\$393.6	\$1,570.2
2014	\$392.9	\$258.0	\$650.9	\$296.3	\$947.2
2015	\$493.9	\$351.9	\$845.7	\$436.3	\$1,282.0
2016	\$600.5	\$391.1	\$991.6	\$508.2	\$1,499.8
2017	\$531.3	\$345.9	\$877.3	\$455.6	\$1,332.9
2018	\$480.9	\$314.1	\$795.0	\$400.6	\$1,195.3
2019 YTD	\$212.5	\$165.5	\$378.0	\$194.0	\$572.0
2019 YTD % Change YOY	-10.2%	12.9%	-1.4%	-2.4%	-1.7%
2019 Ann.	\$425.0	\$331.0	\$755.9	\$388.1	\$1,144.0

Issuance Year	Ginnie Mae Breakdown: Agency Gross Issuance			Total
	FHA	VA	Other	
2000	\$80.2	\$18.8	\$3.2	\$102.2
2001	\$133.8	\$34.7	\$3.1	\$171.5
2002	\$128.6	\$37.9	\$2.5	\$169.0
2003	\$147.9	\$62.7	\$2.5	\$213.1
2004	\$85.0	\$31.8	\$2.5	\$119.2
2005	\$55.7	\$23.5	\$2.1	\$81.4
2006	\$51.2	\$23.2	\$2.3	\$76.7
2007	\$67.7	\$24.2	\$3.0	\$94.9
2008	\$221.7	\$39.0	\$6.9	\$267.6
2009	\$359.9	\$74.6	\$16.8	\$451.3
2010	\$304.9	\$70.6	\$15.3	\$390.7
2011	\$216.1	\$82.3	\$16.9	\$315.3
2012	\$253.4	\$131.3	\$20.3	\$405.0
2013	\$239.2	\$132.2	\$22.2	\$393.6
2014	\$163.9	\$111.4	\$21.0	\$296.3
2015	\$261.5	\$155.6	\$19.2	\$436.3
2016	\$281.8	\$206.5	\$19.9	\$508.2
2017	\$257.6	\$177.8	\$20.2	\$455.6
2018	\$222.6	\$160.8	\$17.2	\$400.6
2019 YTD	\$109.0	\$78.7	\$6.4	\$194.0
2019 YTD % Change YOY	0.5%	-3.9%	-23.6%	-2.4%
2019 Ann.	\$218.0	\$157.3	\$12.7	\$388.1

Sources: eMBS and Urban Institute (top and bottom).

Note: Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of June 2019.

US Agency Market, Originations

Agency net issuance totaled \$108.6 billion in the first half of 2019, down 1.9 percent compared to the same period in 2018. Ginnie Mae net issuance was \$47.0 billion, comprising 43.3 percent of total agency net issuance. Ginnie Mae net issuance was down 8.2 percent compared to the same period in 2018. Ginnie Mae net issuance in the first half of 2019 was comprised of 53.1 percent VA and 46.0 percent FHA.

Agency Net Issuance					
Issuance Year	Fannie Mae	Freddie Mac	GSE Total	Ginnie Mae	Total
2000	\$92.0	\$67.8	\$159.8	\$29.3	\$189.1
2001	\$216.6	\$151.8	\$368.4	-\$9.9	\$358.5
2002	\$218.9	\$138.3	\$357.2	-\$51.2	\$306.1
2003	\$293.7	\$41.1	\$334.9	-\$77.6	\$257.3
2004	\$32.3	\$50.2	\$82.5	-\$40.1	\$42.4
2005	\$62.5	\$111.7	\$174.2	-\$42.2	\$132.0
2006	\$164.3	\$149.3	\$313.6	\$0.2	\$313.8
2007	\$296.1	\$218.8	\$514.9	\$30.9	\$545.7
2008	\$213.0	\$101.8	\$314.8	\$196.4	\$511.3
2009	\$208.1	\$42.5	\$250.6	\$257.4	\$508.0
2010	-\$156.4	-\$146.8	-\$303.2	\$198.3	-\$105.0
2011	-\$32.6	-\$95.8	-\$128.4	\$149.6	\$21.2
2012	\$32.9	-\$75.3	-\$42.4	\$119.1	\$76.8
2013	\$57.5	\$11.6	\$69.1	\$87.9	\$157.0
2014	\$0.5	\$30.0	\$30.5	\$61.6	\$92.1
2015	\$10.2	\$65.0	\$75.1	\$97.3	\$172.5
2016	\$68.6	\$66.8	\$135.5	\$125.3	\$260.8
2017	\$90.2	\$78.2	\$168.5	\$131.3	\$299.7
2018	\$79.4	\$68.4	\$147.7	\$113.9	\$261.6
2019 YTD	\$17.8	\$43.8	\$61.6	\$47.0	\$108.6
2019 YTD % Change YOY	-47.3%	70.0%	3.5%	-8.2%	-1.9%
2019 Ann.	\$35.5	\$87.7	\$123.2	\$94.0	\$217.2

Ginnie Mae Breakdown: Net Issuance				
Issuance Year	FHA	VA	Other	Total
2000	\$29.0	\$0.3	\$0.0	\$29.3
2001	\$0.7	-\$10.6	\$0.0	-\$9.9
2002	-\$22.5	-\$28.7	\$0.0	-\$51.2
2003	-\$56.5	-\$21.1	\$0.0	-\$77.6
2004	-\$45.2	\$5.1	\$0.0	-\$40.1
2005	-\$37.3	-\$12.1	\$7.2	-\$42.2
2006	-\$4.7	\$3.8	\$1.2	\$0.2
2007	\$20.2	\$8.7	\$2.0	\$30.9
2008	\$173.3	\$17.7	\$5.4	\$196.4
2009	\$206.4	\$35.1	\$15.8	\$257.4
2010	\$158.6	\$29.6	\$10.0	\$198.3
2011	\$102.8	\$34.0	\$12.8	\$149.6
2012	\$58.9	\$45.9	\$14.3	\$119.1
2013	\$20.7	\$53.3	\$13.9	\$87.9
2014	-\$4.8	\$53.9	\$12.5	\$61.6
2015	\$22.5	\$66.9	\$7.9	\$97.3
2016	\$45.6	\$73.2	\$6.0	\$124.9
2017	\$50.1	\$76.1	\$5.0	\$131.3
2018	\$49.2	\$61.2	\$3.5	\$113.9
2019 YTD	\$21.6	\$25.0	\$0.4	\$47.0
2019 YTD % Change YOY	6.5%	-13.9%	-78.2%	-8.2%
2019 Ann.	\$43.3	\$49.9	\$0.8	\$94.0

Sources: eMBS and Urban Institute. Note: Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of June 2019.

US Agency Market, Originations

Agency gross issuance moves inversely to interest rates, generally declining as interest rates rise, increasing when interest rates fall, but the seasonal trend is also very strong. This table allows for a comparison with the same month in previous years. In 2019, January and February were lower than 2018, March was about the same, while April, May and June have been much higher, benefitting from the decline in interest rates. The June 2019 gross agency issuance of \$121.9 billion is well above the June 2018 level of \$102.5 billion.

Monthly Agency Issuance

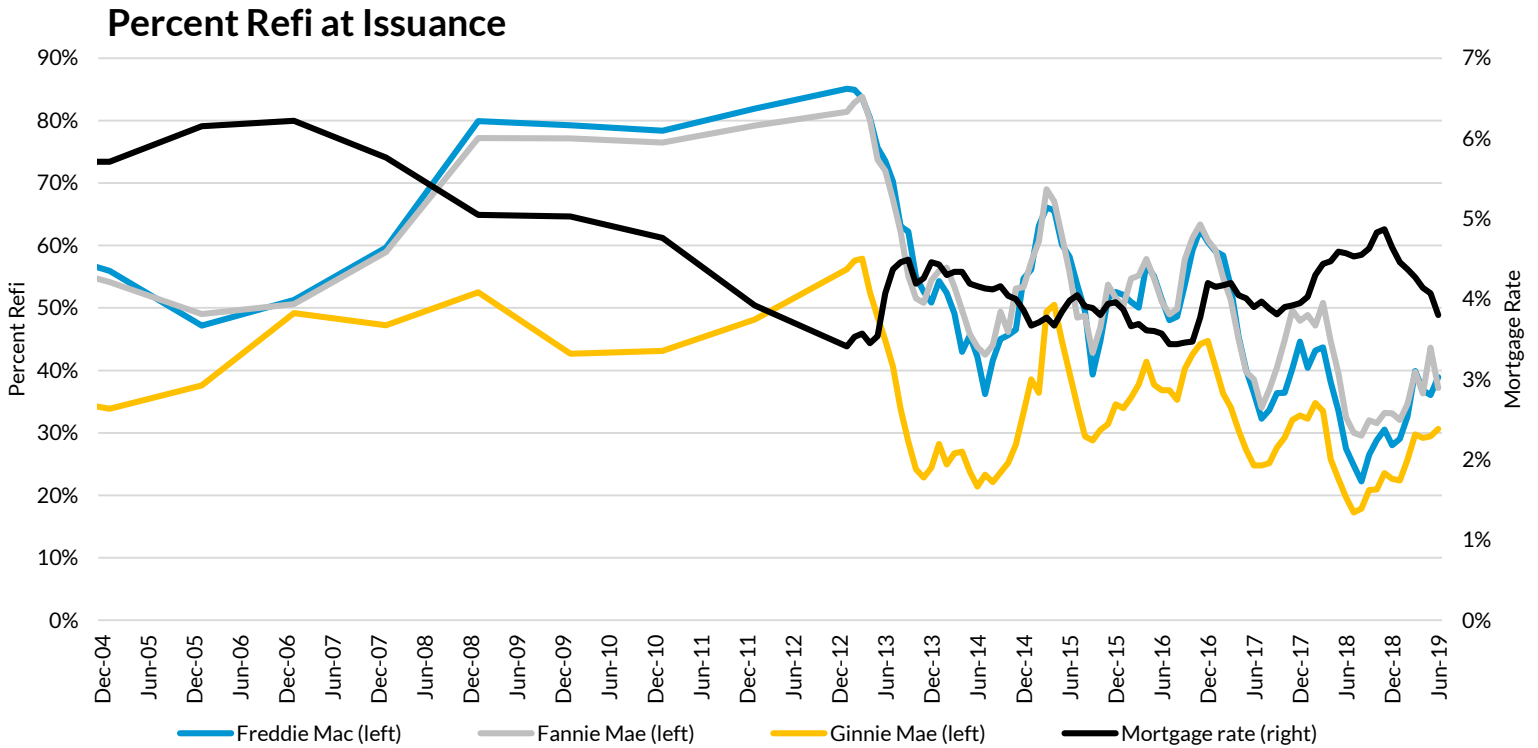
Date	Gross Issuance				Net Issuance			
	Fannie Mae	Freddie Mac	Ginnie Mae	Total	Fannie Mae	Freddie Mac	Ginnie Mae	Total
Jan-16	\$35.6	\$22.5	\$32.5	\$90.6	-\$0.6	\$1.0	\$7.3	\$7.8
Feb-16	\$32.4	\$21.2	\$30.5	\$84.1	\$2.4	\$3.1	\$8.4	\$13.9
Mar-16	\$39.7	\$27.5	\$32.9	\$100.1	\$7.9	\$8.2	\$9.6	\$25.8
Apr-16	\$43.8	\$26.2	\$40.1	\$110.1	\$0.8	-\$0.2	\$8.8	\$9.4
May-16	\$44.2	\$29.9	\$41.6	\$115.6	\$2.4	\$4.4	\$11.4	\$18.3
Jun-16	\$46.7	\$30.1	\$43.9	\$120.8	\$2.7	\$3.0	\$11.9	\$17.7
Jul-16	\$49.8	\$35.3	\$46.1	\$131.1	\$2.3	\$6.3	\$10.8	\$19.4
Aug-16	\$54.9	\$37.9	\$46.7	\$139.5	\$10.4	\$11.0	\$13.8	\$35.2
Sep-16	\$65.8	\$44.0	\$52.5	\$162.4	\$8.7	\$9.0	\$12.5	\$30.2
Oct-16	\$66.0	\$35.9	\$47.4	\$149.3	\$11.8	\$2.7	\$9.3	\$24.5
Nov-16	\$48.8	\$40.2	\$47.2	\$136.3	-\$3.5	\$7.9	\$10.3	\$14.8
Dec-16	\$72.7	\$40.5	\$46.8	\$160.0	\$23.3	\$10.4	\$10.8	\$44.6
Jan-17	\$55.6	\$38.5	\$42.6	\$136.6	\$10.3	\$10.7	\$10.3	\$31.9
Feb-17	\$37.6	\$27.4	\$33.1	\$98.1	\$3.1	\$6.5	\$9.2	\$18.9
Mar-17	\$39.5	\$24.4	\$31.3	\$95.2	\$10.3	\$6.2	\$9.6	\$26.3
Apr-17	\$39.3	\$21.2	\$36.4	\$97.0	\$4.8	\$0.4	\$11.7	\$17.3
May-17	\$40.3	\$22.6	\$36.4	\$99.3	\$7.6	\$2.7	\$13.1	\$23.6
Jun-17	\$45.7	\$25.1	\$39.9	\$110.7	\$8.3	\$2.4	\$13.2	\$24.1
Jul-17	\$45.3	\$27.6	\$40.6	\$113.5	\$5.8	\$3.5	\$12.1	\$21.5
Aug-17	\$49.1	\$29.3	\$42.8	\$121.1	\$12.0	\$6.7	\$15.6	\$33.9
Sep-17	\$47.3	\$27.9	\$40.2	\$115.5	\$7.4	\$3.8	\$10.5	\$21.7
Oct-17	\$42.9	\$34.6	\$38.4	\$115.9	\$6.4	\$12.5	\$10.7	\$29.6
Nov-17	\$43.5	\$37.2	\$37.8	\$118.5	\$4.6	\$13.6	\$8.2	\$26.4
Dec-17	\$45.3	\$30.0	\$36.2	\$111.5	\$9.6	\$8.2	\$6.8	\$24.6
Jan-18	\$47.4	\$21.4	\$35.2	\$104.0	\$12.4	\$0.3	\$7.8	\$20.6
Feb-18	\$40.3	\$21.5	\$31.9	\$93.7	\$8.0	\$2.3	\$7.1	\$17.4
Mar-18	\$35.6	\$21.3	\$29.0	\$85.9	\$4.9	\$3.0	\$6.1	\$14.0
Apr-18	\$36.3	\$26.2	\$32.7	\$95.2	\$1.7	\$6.1	\$9.1	\$16.8
May-18	\$38.9	\$27.5	\$33.7	\$100.1	\$4.5	\$7.2	\$10.6	\$22.4
Jun-18	\$38.2	\$28.8	\$35.6	\$102.5	\$2.2	\$6.8	\$10.5	\$19.5
Jul-18	\$40.3	\$26.2	\$35.6	\$102.1	\$4.2	\$3.7	\$10.7	\$18.6
Aug-18	\$50.4	\$29.9	\$37.5	\$117.8	\$14.9	\$7.9	\$12.8	\$35.6
Sep-18	\$41.8	\$30.1	\$34.8	\$106.6	\$5.7	\$6.2	\$9.1	\$21.0
Oct-18	\$39.8	\$27.4	\$33.2	\$100.3	\$10.1	\$7.6	\$12.1	\$29.7
Nov-18	\$35.1	\$30.1	\$32.4	\$97.6	\$2.6	\$10.8	\$9.6	\$22.9
Dec-18	\$36.9	\$23.9	\$28.4	\$89.1	\$8.2	\$6.4	\$8.4	\$23.0
Jan-19	\$33.3	\$19.2	\$29.0	\$81.6	\$5.5	\$2.5	\$9.5	\$17.5
Feb-19	\$27.3	\$19.9	\$23.5	\$70.7	\$1.2	\$3.6	\$4.6	\$9.5
Mar-19	\$29.6	\$27.3	\$26.6	\$83.5	\$1.9	\$10.3	\$5.8	\$18.0
Apr-19	\$33.1	\$30.8	\$32.9	\$96.8	\$0.6	\$11.0	\$8.5	\$20.1
May-19	\$44.5	\$34.3	\$38.8	\$117.6	\$7.0	\$10.3	\$9.4	\$26.7
Jun-19	\$44.6	\$34.0	\$43.3	\$121.9	\$1.6	\$6.2	\$9.2	\$16.9

Sources: eMBS and Urban Institute.

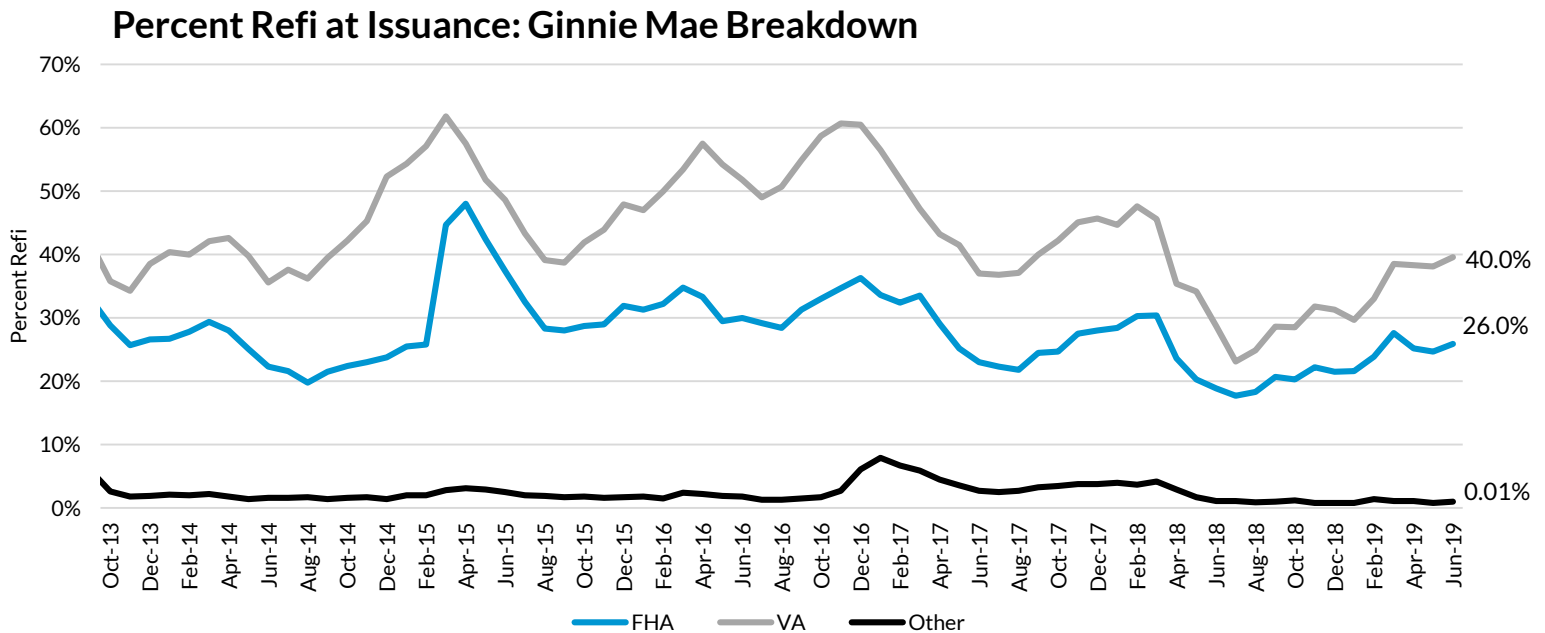
Note: Dollar amounts are in billions. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. All data is as of June 2019.

US Agency Market, Originations

The Ginnie Mae refi share stood at 31 percent in June 2019, below the 37-39 percent share for Fannie Mae and Freddie Mac. Within Ginnie Mae, VA had the highest refi share at 40 percent in June 2019, followed by FHA's 26 percent. In the spring and summer of 2018, refi share for all agencies fell sharply due to rising interest rates and seasonal upticks in purchase activity. The refi share stabilized after the summer surge in purchase activity ended; it ticked up in spring 2019 as rates trended down.



Sources: eMBS and Urban Institute. Note: Based on at-issuance balance. Data as of June 2019.



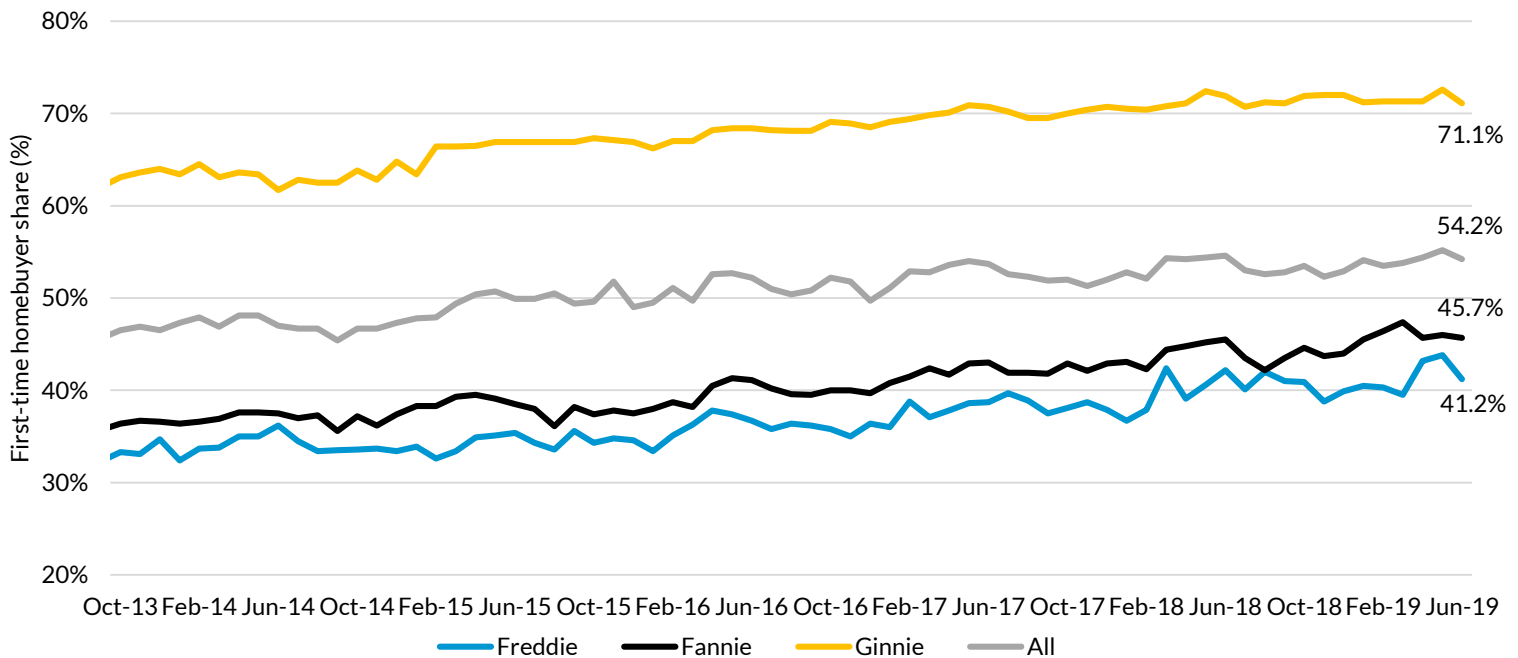
Sources: eMBS and Urban Institute.

Note: Based on at-issuance balance. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Credit Box

The first time homebuyer share of Ginnie Mae purchase loans was 71.1 percent in June 2019, down slightly from its historical high in May. First time homebuyers comprise a significantly higher share of the Ginnie Mae purchase market than of the GSE purchase market, with first time homebuyers accounting for 45.7 percent and 41.2 percent of Fannie Mae and Freddie Mac purchase originations respectively. The bottom table shows that based on mortgages originated in June 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, a much higher LTV and similar DTI.

First Time Homebuyer Share: Purchase Only Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

	Fannie Mae		Freddie Mac		Ginnie Mae		All	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	242,015	272,636	251,547	276,988	218,714	272,602	232,261	274,050
Credit Score	739.8	755.3	744.5	758.4	676.7	703.6	709.1	741.5
LTV (%)	88.4	79.3	87.3	80.1	96.9	95.3	92.4	84.2
DTI (%)	35.9	36.5	35.1	36.1	41.9	42.5	38.7	38.1
Loan Rate (%)	4.5	4.4	4.4	4.3	4.5	4.3	4.5	4.3

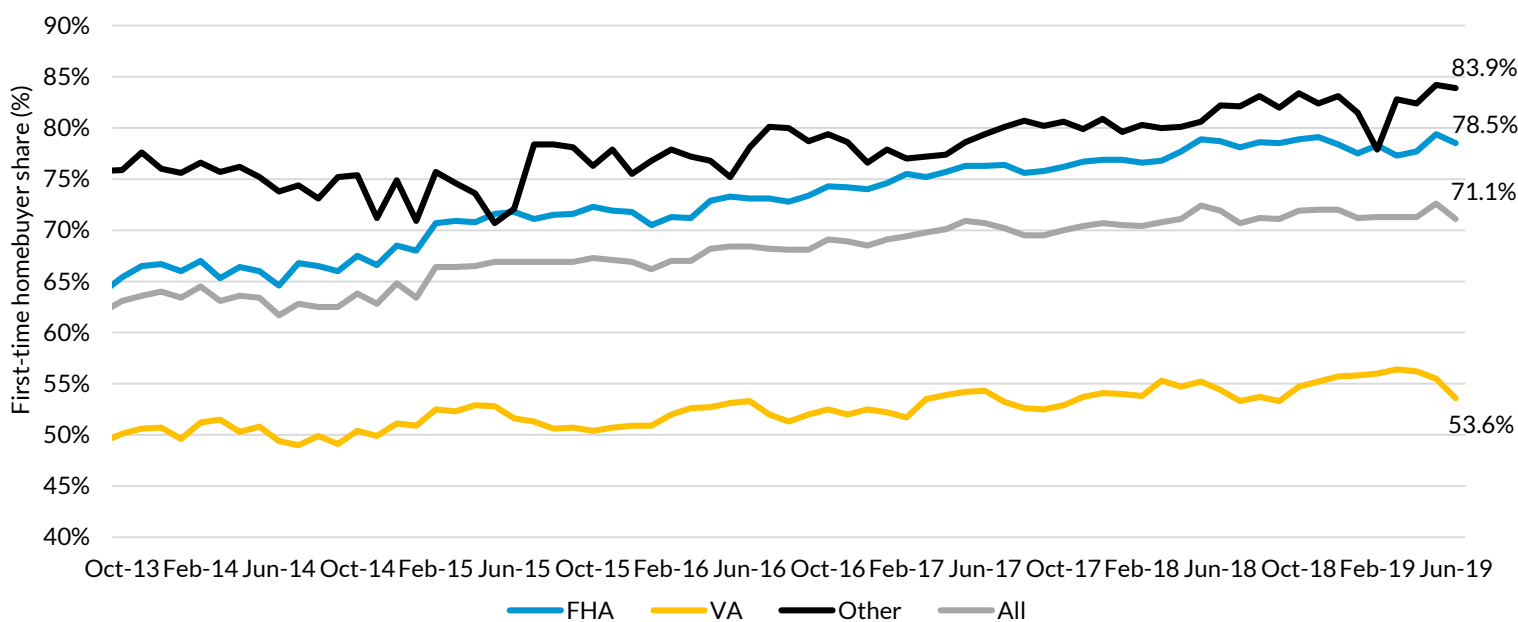
Sources: eMBS and Urban Institute.

Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Data as of June 2019.

Credit Box

Within the Ginnie Mae purchase market, 78.5 percent of FHA loans, 53.6 percent of VA loans and 83.9 percent of other loans represent financing for first-time home buyers in June 2019. The bottom table shows that based on mortgages originated in June 2019, the average first-time homebuyer was more likely than an average repeat buyer to take out a smaller loan, have a lower credit score, higher LTV and similar DTI.

First Time Homebuyer Share: Ginnie Mae Purchase Only Loans Breakdown by Source



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

	FHA		VA		Other		Ginnie Mae Total	
	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat	First-Time	Repeat
Loan Amount (\$)	212,360	234,047	263,934	316,646	147,811	163,071	218,714	272,602
Credit Score	666.7	671.2	699.7	733.1	691.5	699.6	676.7	703.6
LTV (%)	95.6	94.0	99.6	96.1	99.4	99.4	96.9	95.3
DTI (%)	43.2	44.1	40.6	41.6	34.9	36.2	41.9	42.5
Loan Rate (%)	4.6	4.5	4.3	4.1	4.4	4.4	4.5	4.3

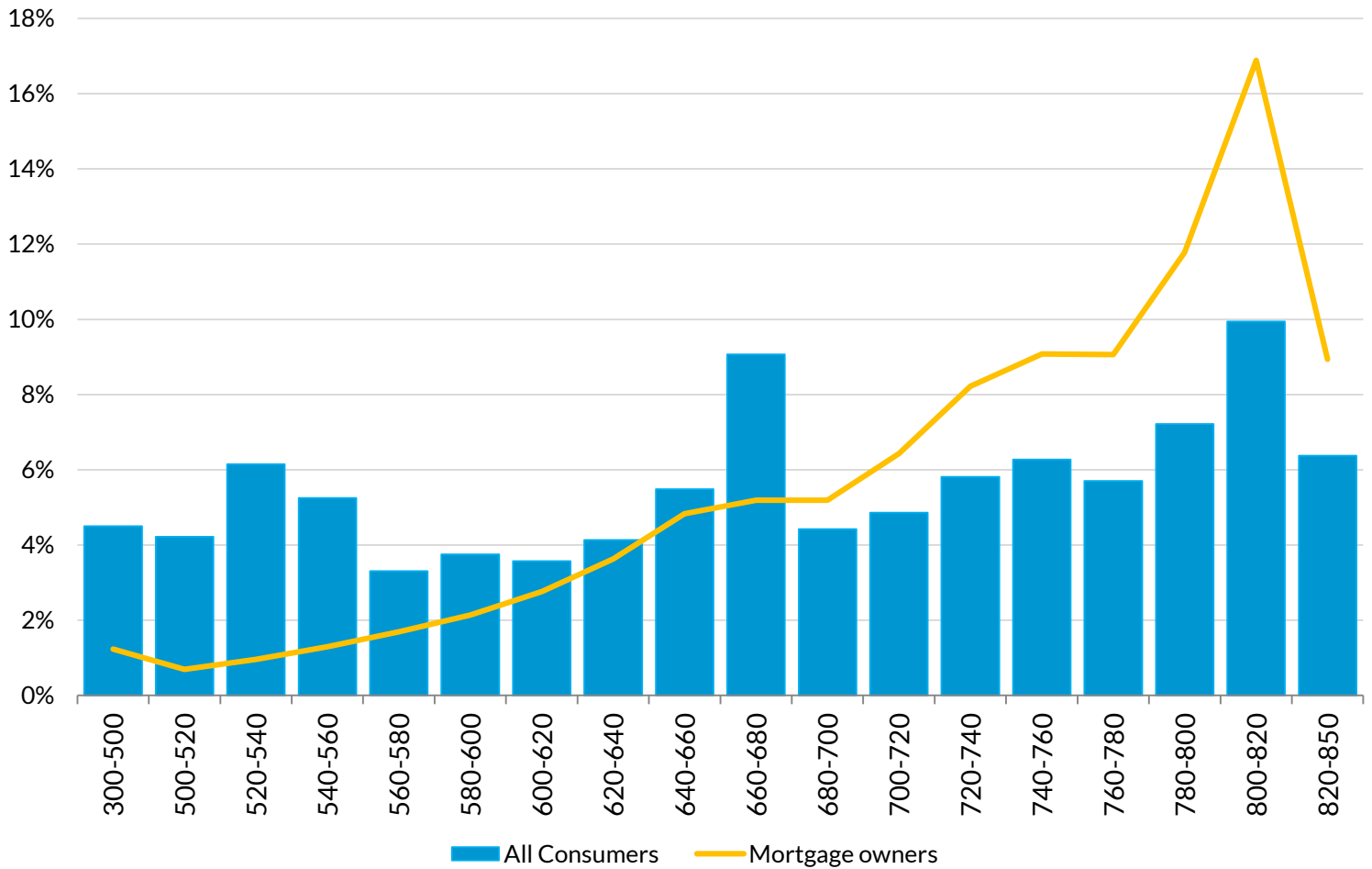
Sources: eMBS and Urban Institute. Note: Data as of June 2019. "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV.

Credit Box

Consumers who have a mortgage are concentrated at the high end of the general credit score spectrum. The top table shows that the median FICO score for all consumers (682) is equal to the 25th percentile of those with a mortgage (682).

FICO Score Distribution: Mortgage Owners vs All Consumers

All Consumers- Percentiles								
Minimum	P5	P10	P25	P50	P75	P90	P95	Maximum
300	503	524	587	682	774	813	822	839
Mortgage Owners- Percentiles								
Minimum	P5	P10	P25	P50	P75	P90	P95	Maximum
300	570	615	682	752	801	818	824	839



Sources: Credit Bureau Data and Urban Institute.
 Note: Data as of August 2017.

June 2019 Credit Box at a Glance

In June 2019, the median Ginnie Mae FICO score was 675 versus 754 for Fannie Mae and 757 for Freddie Mac. Note that the FICO score for the 10th percentile was 619 for Ginnie Mae, versus 682 for Fannie Mae and 686 for Freddie Mac. Within the Ginnie Mae market, FHA loans have a median FICO score of 662, VA loans have a median FICO score of 708 and other loans have a median FICO score of 689.

Purchase FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	311,915	642	680	733	776	798	726
Fannie	109,518	686	718	756	786	801	749
Freddie	83,218	692	725	761	788	802	754
Ginnie	119,179	621	643	675	723	771	684

Refi FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	156,144	644	682	729	772	795	724
Fannie	62,564	675	707	748	781	799	741
Freddie	47,311	675	709	749	780	799	742
Ginnie	46,269	612	642	676	718	763	680

All FICO							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	468,059	642	681	732	775	797	725
Fannie	172,082	682	714	754	784	801	746
Freddie	130,529	686	720	757	786	801	749
Ginnie	165,448	619	643	675	721	769	683

Purchase FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	119,179	621	643	675	723	771	684
FHA	72,669	614	636	662	695	732	668
VA	37,407	630	663	718	770	796	715
Other	9,103	636	655	689	729	762	693

Refi FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	46,269	612	642	676	718	763	680
FHA	23,512	605	633	661	693	728	664
VA	22,673	622	655	696	743	780	697
Other	84	612	655	700	735	774	693

All FICO: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	165,448	619	643	675	721	769	683
FHA	96,181	612	635	662	694	731	667
VA	60,080	627	660	708	761	792	708
Other	9,187	635	655	689	729	762	693

Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

June 2019 Credit Box at a Glance

In June 2019, the median loan-to-value ratio (LTV) was 96.5 percent for Ginnie Mae, and 80 percent for both Fannie Mae and Freddie Mac. The 90th percentile was 101 percent for Ginnie Mae, 97 percent for Fannie Mae and 95 percent for Freddie Mac. Within the Ginnie Mae market, the median LTV was 96.5 for FHA, 100.0 for VA and 101.0 for other programs.

Purchase LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	312,065	73.0	80.0	95.0	96.5	100.0	88.0
Fannie	109,406	64.0	80.0	85.0	95.0	97.0	83.1
Freddie	83,288	65.0	80.0	81.0	95.0	95.0	82.5
Ginnie	119,371	92.9	96.5	96.5	100.0	102.0	96.4

Refi LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	157,972	48.0	63.0	75.0	86.4	96.9	73.3
Fannie	62,568	42.0	57.0	70.0	79.0	82.0	66.2
Freddie	47,323	43.0	59.0	72.0	80.0	84.0	67.5
Ginnie	48,081	72.2	83.5	88.5	98.3	100.0	88.0

All LTV							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	470,037	59.0	75.0	87.1	96.5	99.0	83.1
Fannie	171,974	52.0	69.0	80.0	90.0	97.0	77.0
Freddie	130,611	53.0	70.0	80.0	90.0	95.0	77.1
Ginnie	167,452	83.8	94.0	96.5	100.0	101.0	94.0

Purchase LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	119,371	92.9	96.5	96.5	100.0	102.0	96.4
FHA	72,777	93.6	96.5	96.5	96.5	96.5	95.2
VA	37,449	90.0	100.0	100.0	102.2	103.0	98.0
Other	9,145	95.7	99.2	101.0	101.0	102.0	99.4

Refi LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	48,081	72.2	83.5	88.5	98.3	100.0	88.0
FHA	24,100	70.0	81.4	86.5	92.1	97.9	84.5
VA	23,891	75.0	86.9	96.6	100.0	101.2	91.7
Other	90	71.7	83.5	96.7	100.0	101.0	89.7

All LTV: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	167,452	83.8	94.0	96.5	100.0	101.0	94.0
FHA	96,877	83.9	92.0	96.5	96.5	96.5	92.5
VA	61,340	82.1	94.1	100.0	100.0	102.4	95.5
Other	9,235	95.6	99.2	101.0	101.0	102.0	99.3

Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Data as of June 2019.

June 2019 Credit Box at a Glance

In June 2019, the median Ginnie Mae debt-to-income ratio (DTI) was 42.6 percent, considerably higher than the 37 percent median DTI for both Freddie Mac and Fannie Mae. The 90th percentile for Ginnie Mae was 54.3 percent, also much higher than the 47 percent DTI for the GSEs. Within the Ginnie Mae market, the median FHA DTI ratio was 44.3 percent, versus 41.1 percent for VA and 36.0 percent for other lending programs.

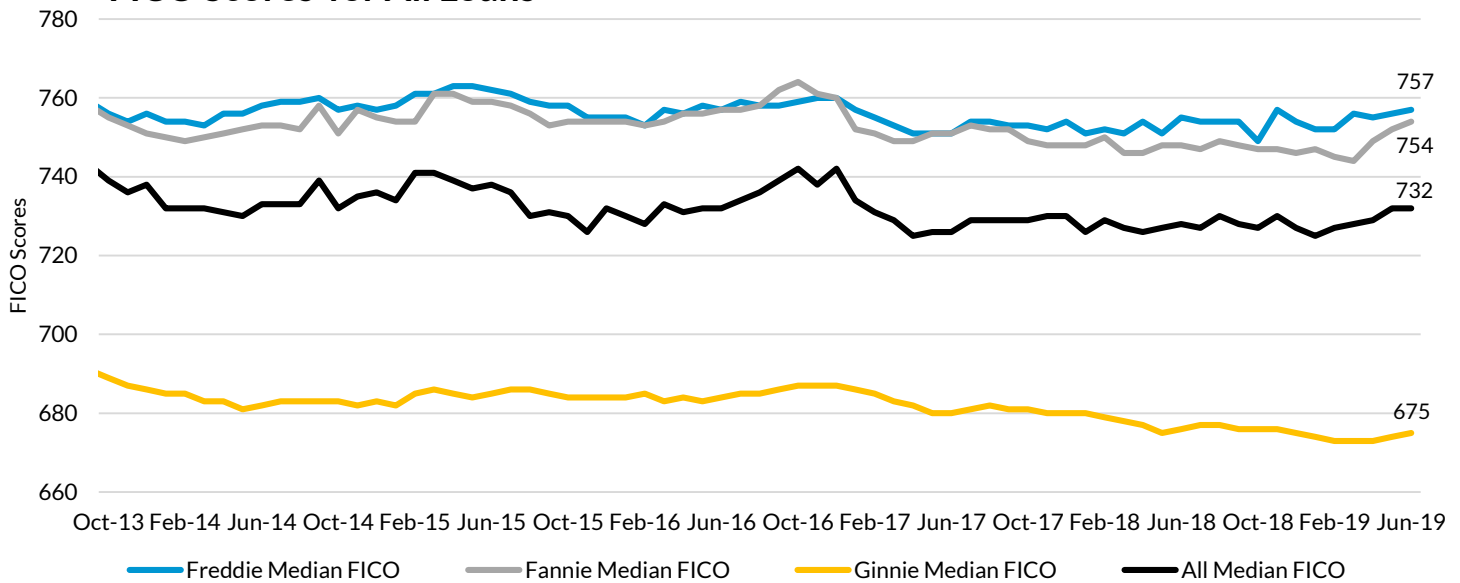
Purchase DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	311,885	24.0	31.3	39.0	45.2	50.0	38.2
Fannie	109,609	23.0	29.0	37.0	44.0	48.0	36.0
Freddie	83,285	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	118,991	29.0	35.7	42.7	49.4	54.3	42.1
Refi DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	142,619	23.0	30.0	38.0	44.0	49.0	36.7
Fannie	62,542	22.0	29.0	37.0	43.0	47.0	35.3
Freddie	47,311	22.0	29.0	37.0	43.0	47.0	35.4
Ginnie	32,766	26.5	33.3	42.1	49.3	54.5	41.0
All DTI							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	454,504	24.0	31.0	39.0	45.0	49.5	37.7
Fannie	172,151	22.0	29.0	37.0	43.0	47.0	35.8
Freddie	130,596	22.0	29.0	37.0	43.0	47.0	35.5
Ginnie	151,757	28.5	35.2	42.6	49.4	54.3	41.8
Purchase DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	118,991	29.0	35.7	42.7	49.4	54.3	42.1
FHA	72,772	30.9	37.6	44.4	50.4	54.7	43.4
VA	37,149	27.0	34.1	41.6	48.6	54.1	41.1
Other	9,070	25.8	30.8	36.1	40.1	43.0	35.1
Refi DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	32,766	26.5	33.3	42.1	49.3	54.5	41.0
FHA	18,613	28.9	35.7	43.9	50.5	54.9	42.5
VA	14,079	23.9	31.8	39.8	47.3	53.3	39.1
Other	74	17.4	22.8	31.2	40.3	46.5	32.1
All DTI: Ginnie Mae Breakdown By Source							
	Number of Loans	P10	P25	Median	P75	P90	Mean
All	151,757	28.5	35.2	42.6	49.4	54.3	41.8
FHA	91,385	30.5	37.2	44.3	50.4	54.7	43.2
VA	51,228	26.2	33.1	41.1	48.2	53.9	40.5
Other	9,144	25.7	30.8	36.0	40.1	43.0	35.1

Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Credit Box: Historical

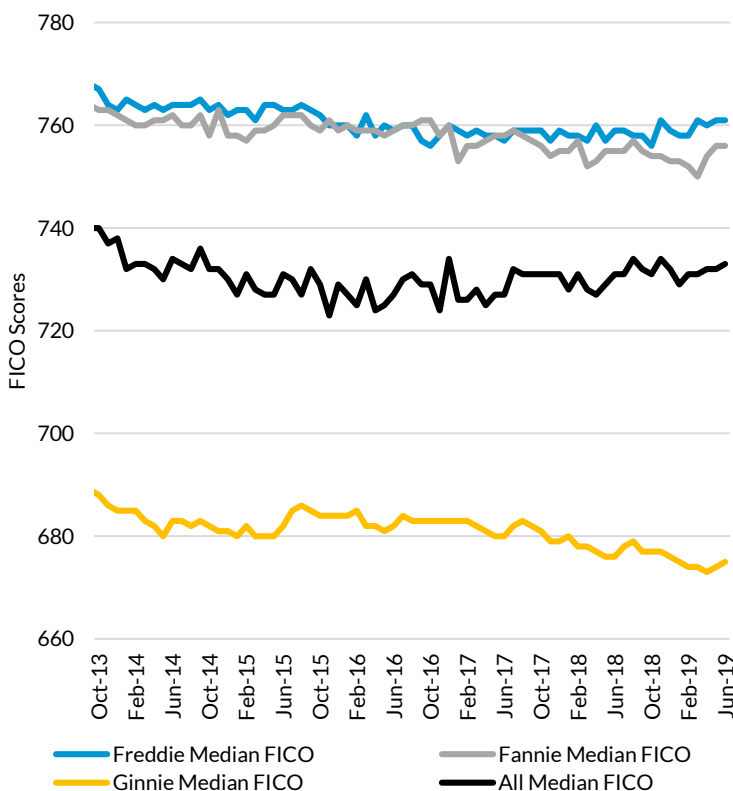
The median FICO score for all agency loans originated in June 2019 was 732, flat from the previous month. The figures show that the median FICO score for Ginnie Mae borrowers has always been considerably lower than for GSE borrowers. Since early 2019, the median FICO score for Ginnie borrowers has remained flat ~~trended down~~, while FICOs for Fannie and Freddie are ~~marginally~~ higher. The difference between Ginnie Mae and GSE borrower FICOs is ~~slightly~~ wider for purchase loans than for refi loans.

FICO Scores for All Loans



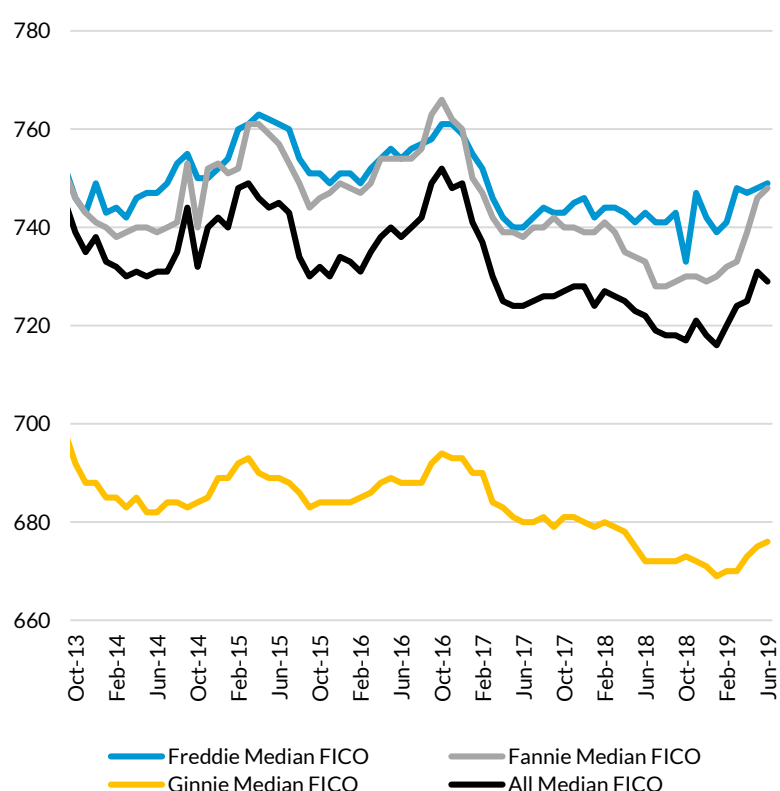
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

FICO Scores for Purchase Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

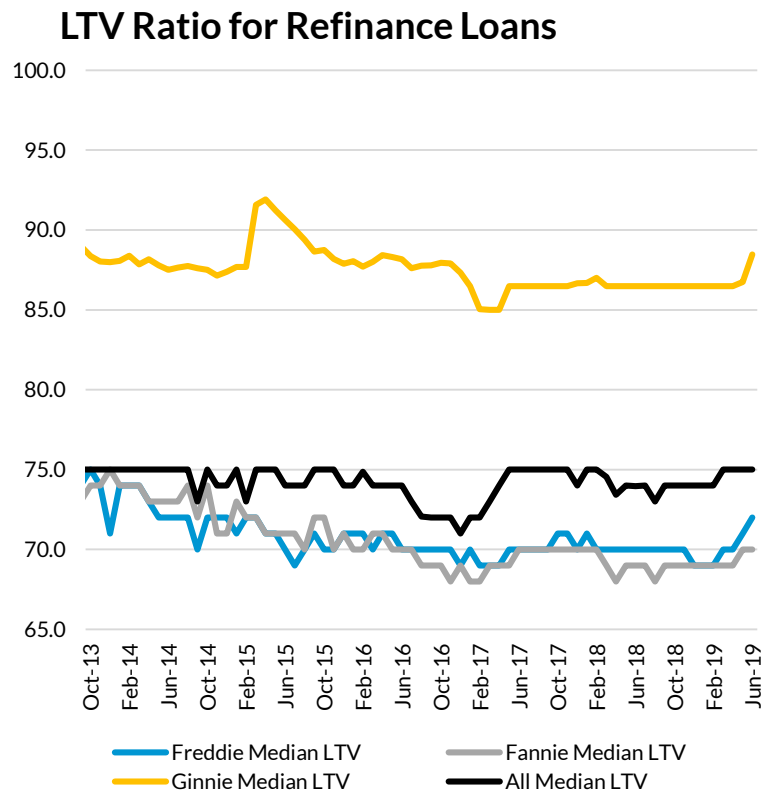
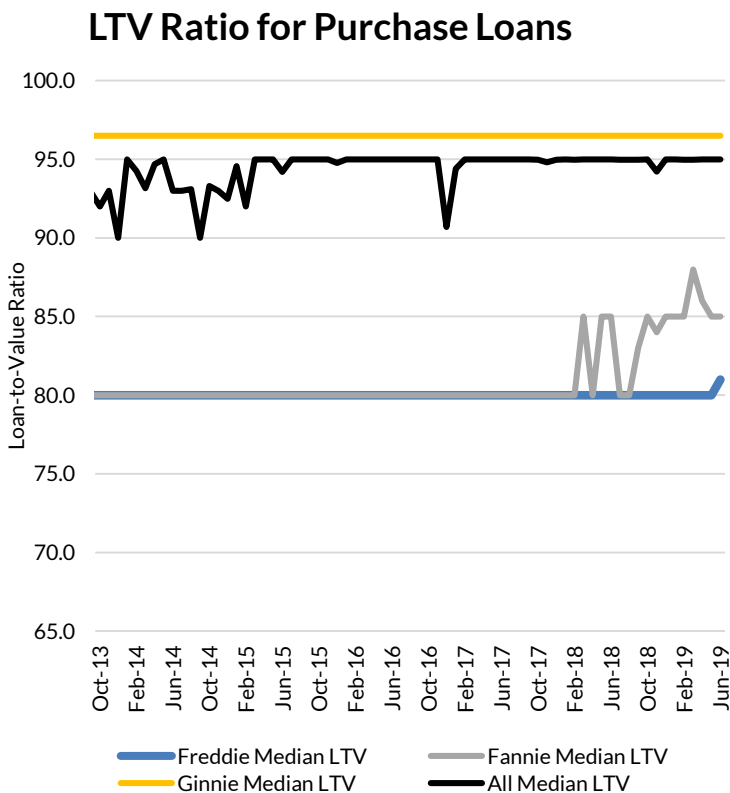
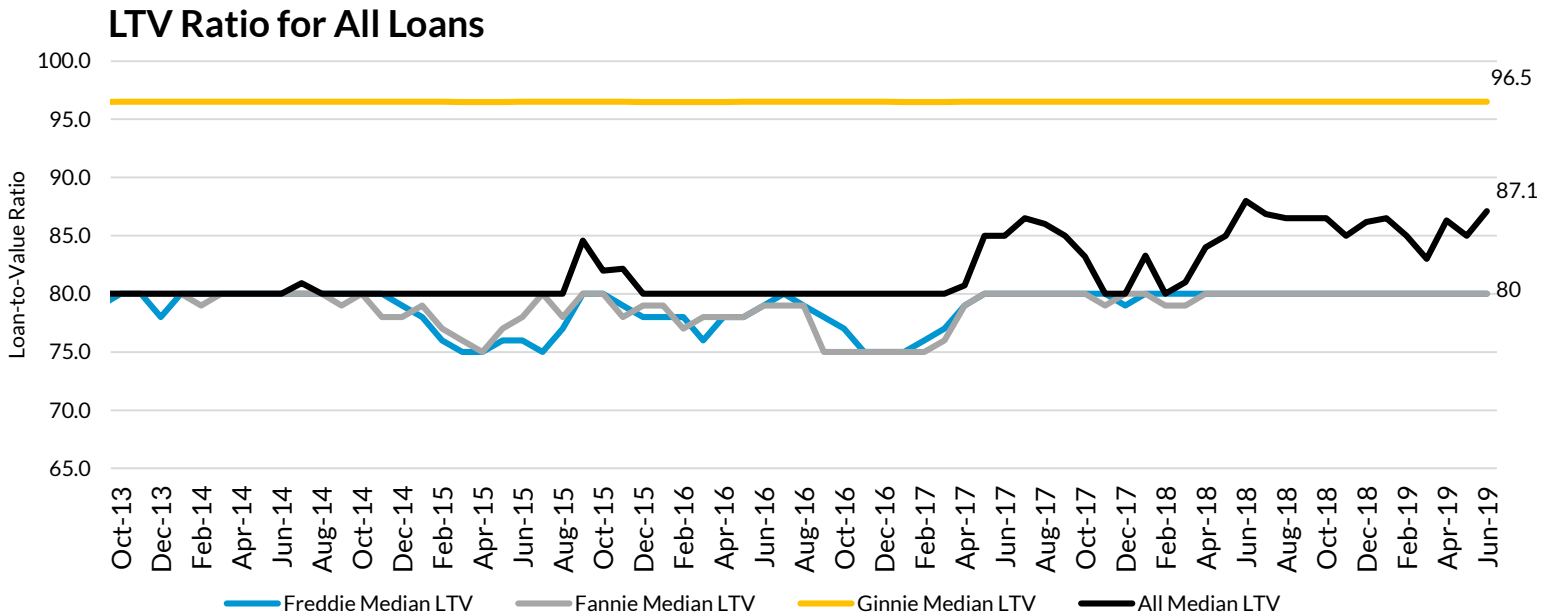
FICO Scores for Refinance Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Credit Box: Historical

Median LTVs for Ginnie Mae loans have historically been at 96.5 percent, much higher than the 80 percent LTVs for the GSEs. Through time, both Ginnie Mae and GSE refinances have LTVs about 6-20 points lower than their purchase counterparts.

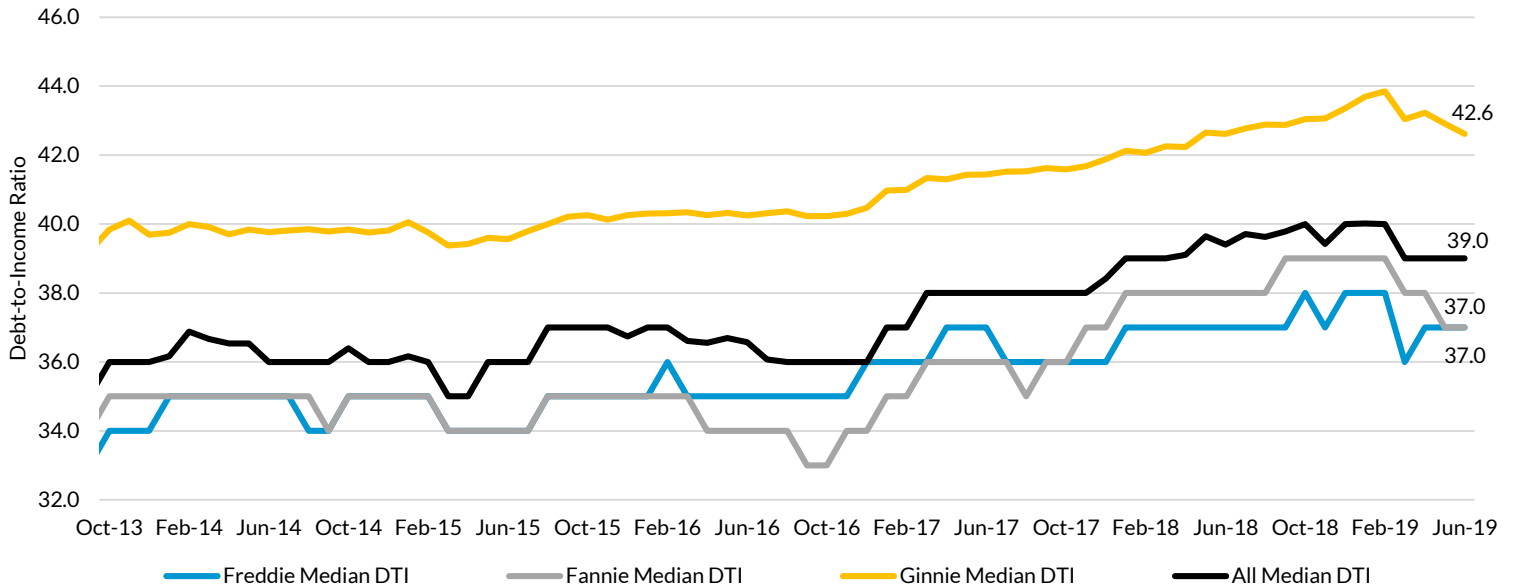


Sources: eMBS and Urban Institute. Note: In May 2017 Ginnie Mae began disclosing issuer-reported LTV for FHA loans, which includes the financed upfront mortgage insurance premium. To make it consistent with the previously reported LTV, we removed the financed upfront mortgage insurance premium by subtracting 169 bps from this new issuer-reported LTV. Sources and note apply to all three graphs. Data as of June 2019.

Credit Box: Historical

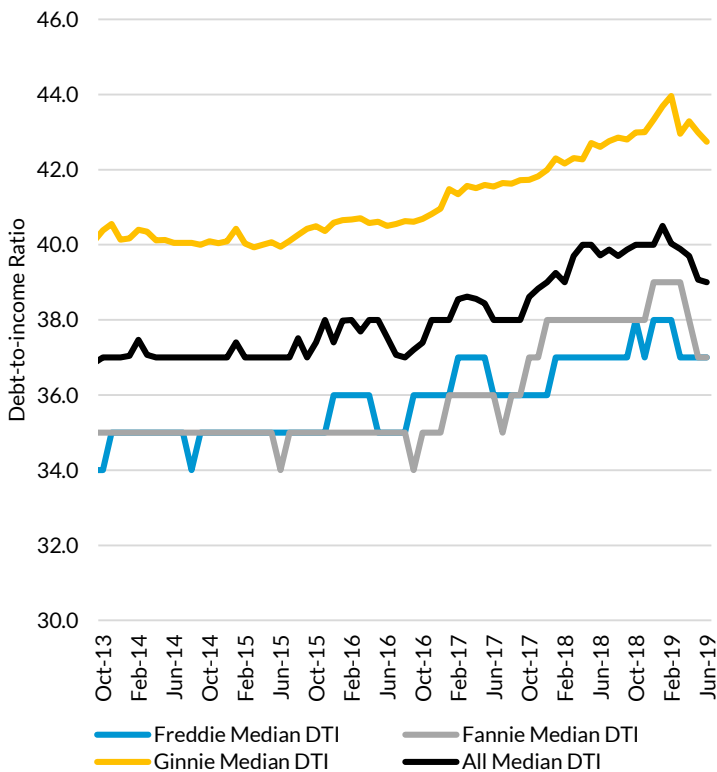
Median debt-to-income ratios on Ginnie Mae loans have historically been in the low 40s, considerably higher than for the GSEs. DTIs have increased over the past two years for both Ginnie Mae and GSE loans, with the movement more pronounced for Ginnie Mae. Increases in DTI are very typical in an environment of rising interest rates and rising home prices. All three agencies have witnessed measurable declines in DTIs in spring and summer 2019 driven by lower interest rates.

DTI Ratio for All Loans



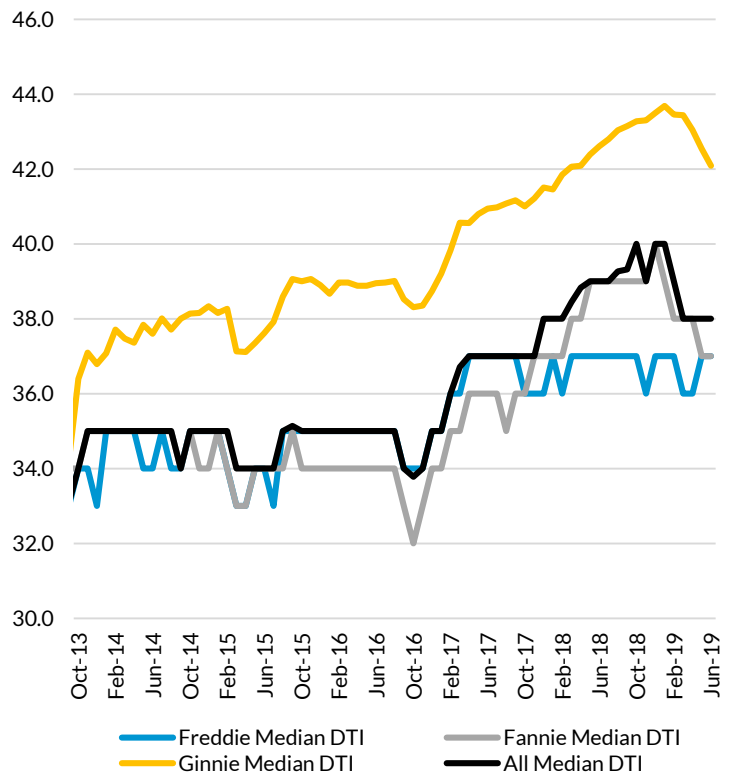
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

DTI Ratio for Purchase Loans



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

DTI Ratio for Refinance Loans

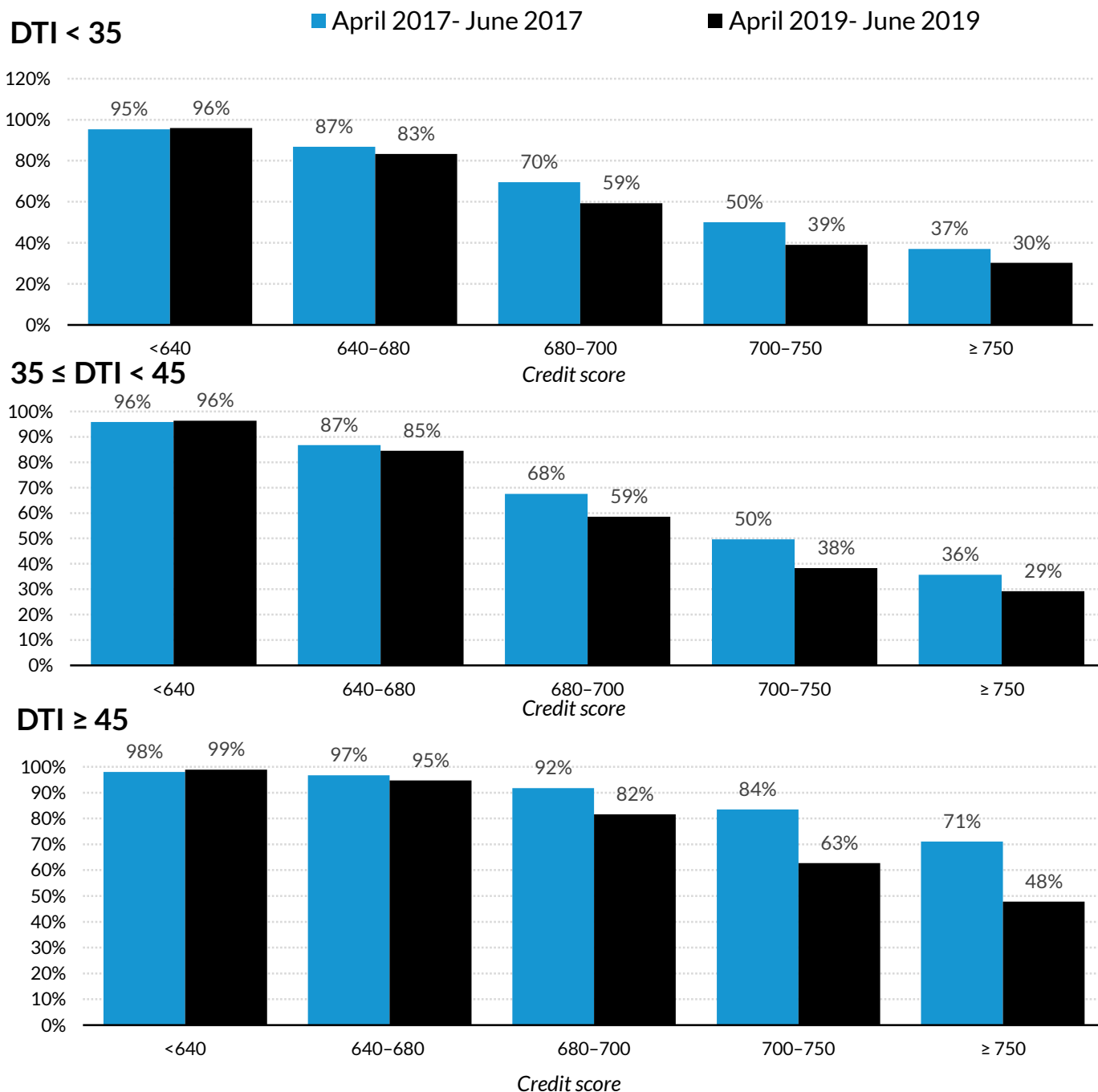


Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Credit Box: Historical

This table shows Ginnie Mae's share of agency high-LTV lending by DTI and FICO. In each DTI bucket, Ginnie Mae's share is more concentrated in lower FICO scores than in higher FICO scores. In April 2019–June 2019, Ginnie Mae accounted for 96 percent of agency issuance for DTIs under 35 and FICOs below 640, compared to just 30 percent for DTIs below 35 and FICO 750 and higher. The Ginnie/GSE split in the 35-45 DTI bucket looks a lot like the below 35 percent DTI bucket. In April 2019–June 2019, Ginnie Mae's share of issuance was higher for DTIs of 45 and above, as compared with the two lower DTI buckets. Ginnie Mae share of loans with a DTI of 45 and above and a FICO of 680-700 was 82 percent; it was 59 percent for the same FICO in the lower DTI buckets. Comparing this period to 2 years earlier, it is clear that GSEs have stepped up their higher LTV lending in all but the lowest FICO buckets, taking market share from Ginnie Mae.

Ginnie Mae Share of Agency Market by DTI and FICO for Loans with LTV ≥ 95



Sources: eMBS and Urban Institute.

High LTV Loans: Ginnie Mae vs. GSEs

Ginnie Mae dominates high-LTV lending, with 70.9 percent of its issuances in the April 2019-June 2019 period having LTVs of 95 or above, compared to 21.0 percent for the GSEs. The GSEs have increased their high-LTV lending share from 17 percent in April 2017-June 2017. Ginnie Mae's high-LTV lending is down slightly over the same period from 71.2 percent. As home prices and interest rates have increased, the share of high-DTI lending (loans with DTI \geq 45) has increased across the FICO spectrum.

Share of Loans with LTV \geq 95

	Ginnie Mae	GSE	All
April 2017-June 2017	71.2%	17.0%	35.9%
April 2019-June 2019	70.9%	21.0%	37.2%

Agency Market Share by DTI and FICO for Loans with LTV \geq 95

April 2017-June 2017

DTI	FICO					All
	<640	640-680	680-700	700-750	\geq 750	
< 35	3.1%	6.0%	3.3%	8.0%	9.3%	29.8%
35-45	5.5%	10.4%	5.4%	12.1%	10.0%	43.4%
\geq 45	3.8%	8.3%	3.7%	6.8%	4.2%	26.8%
All	12.4%	24.7%	12.5%	26.9%	23.5%	100.0%

April 2019-June 2019

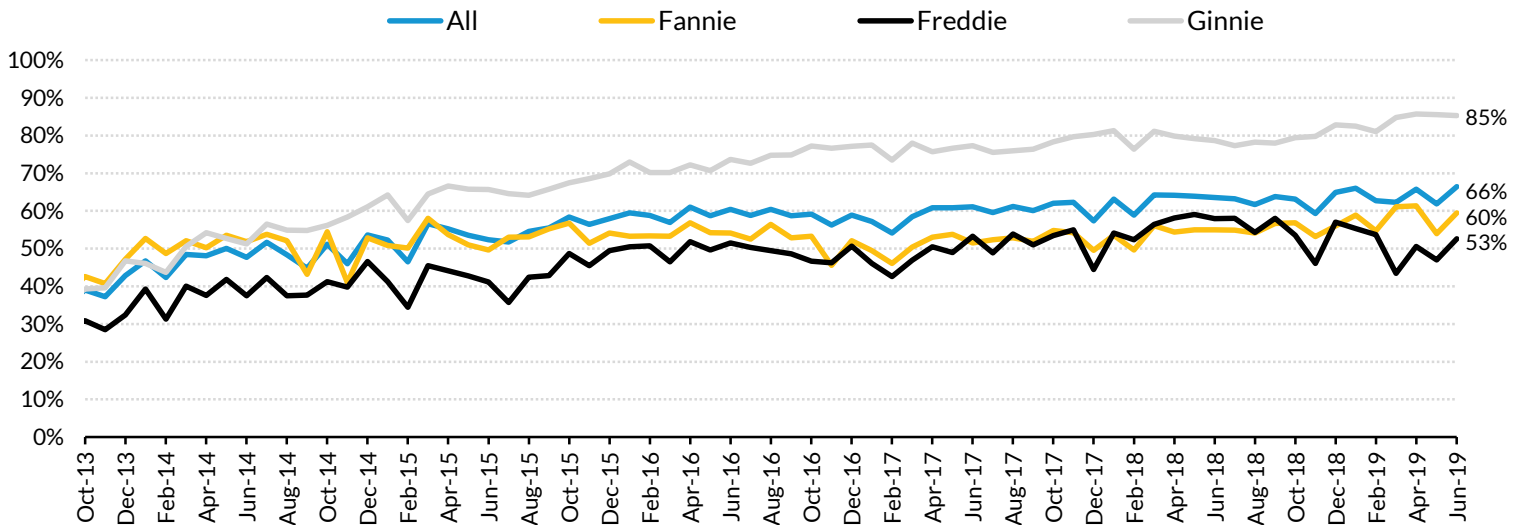
DTI	FICO					All
	<640	640-680	680-700	700-750	\geq 750	
< 35	3.0%	4.6%	2.5%	7.0%	9.3%	26.5%
35-45	5.7%	8.6%	4.6%	11.3%	10.1%	40.3%
\geq 45	5.2%	8.8%	4.2%	8.7%	6.3%	33.2%
All	13.9%	21.9%	11.4%	27.0%	25.7%	100.0%

Sources: eMBS and Urban Institute.

Nonbank Originators

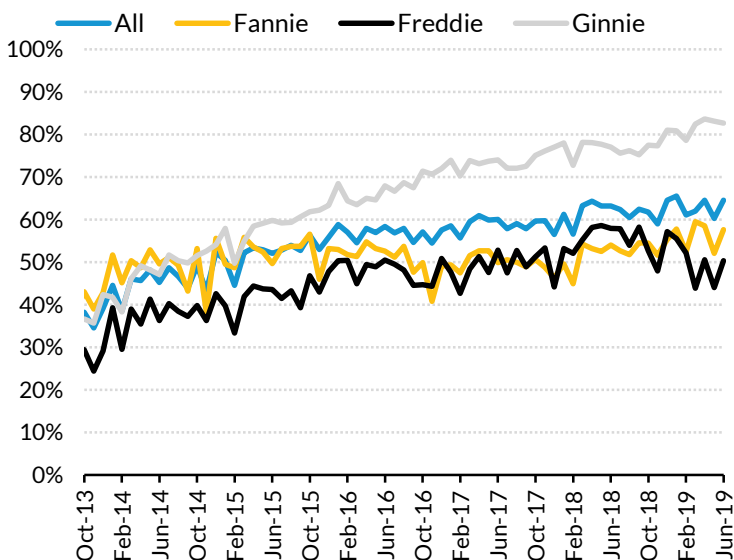
The nonbank origination share has been rising steadily for all three agencies since 2013. The Ginnie Mae nonbank share has been consistently higher than the GSEs, falling slightly below its record high of 86 to 85 percent in June 2019. Freddie and Fannie's nonbank shares both grew in June, to 53 and 60 percent respectively (note that these numbers can be volatile on a month-to-month basis). Ginnie Mae, Fannie Mae and Freddie Mac all have higher nonbank origination shares for refi activity than for purchase activity. Freddie Mac's nonbank share is the lowest among the three agencies for both purchase and refinance loans.

Nonbank Origination Share: All Loans

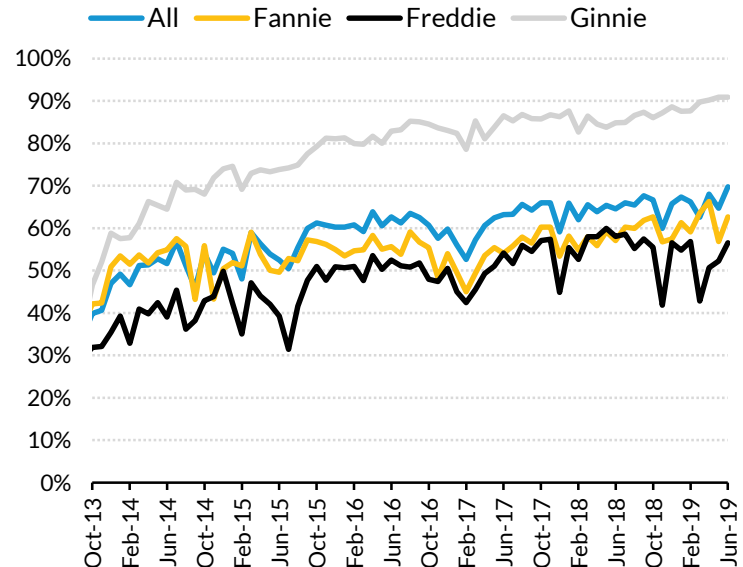


Sources: eMBS and Urban Institute
 Note: Data as of June 2019.

Nonbank Origination Share: Purchase Loans



Nonbank Origination Share: Refinance Loans

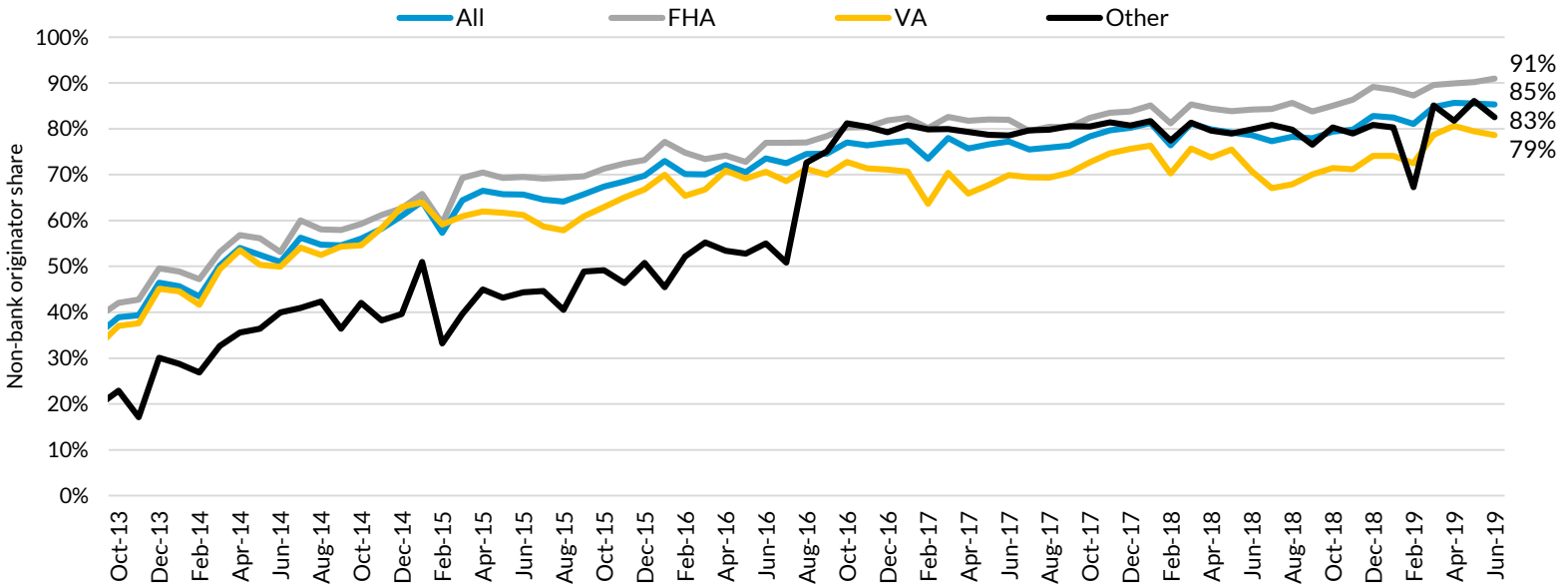


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Ginnie Mae Nonbank Originators

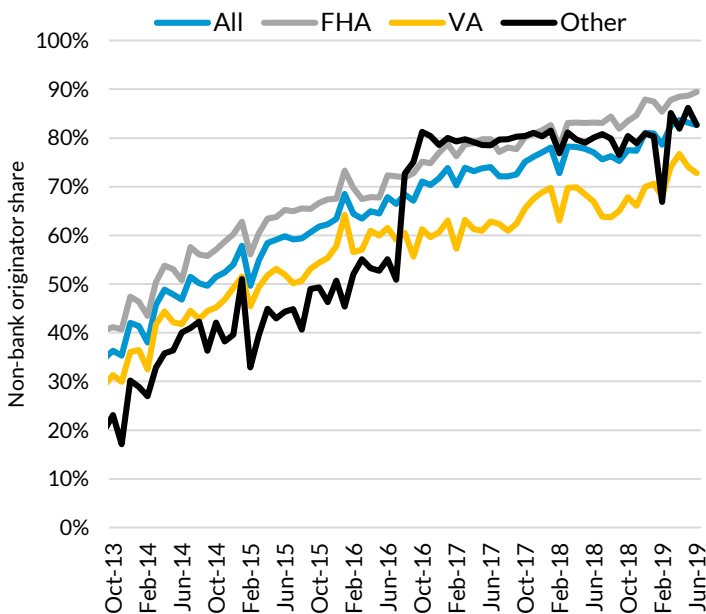
In June 2019, Ginnie Mae's nonbank share fell just slightly to 85 percent. The nonbank originator share for FHA continued to grow, reaching a historical high of 91 percent. The nonbank originator share for VA was 79 percent, and the nonbank originator share for other loans, which can fluctuate quite a bit month to month, increased to 83 percent.

Ginnie Mae Nonbank Originator Share: All Loans

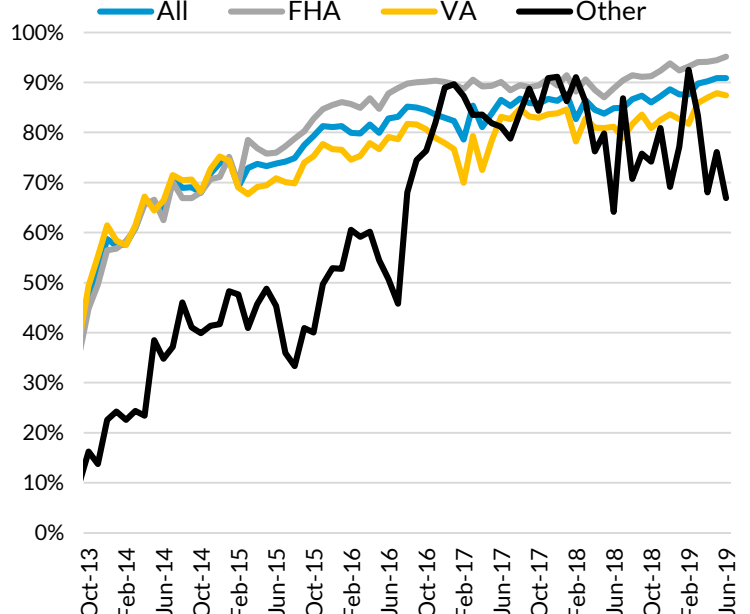


Sources: eMBS and Urban Institute
 Note: Data as of June 2019.

Ginnie Mae Nonbank Share: Purchase Loans



Ginnie Mae Nonbank Share: Refinance Loans

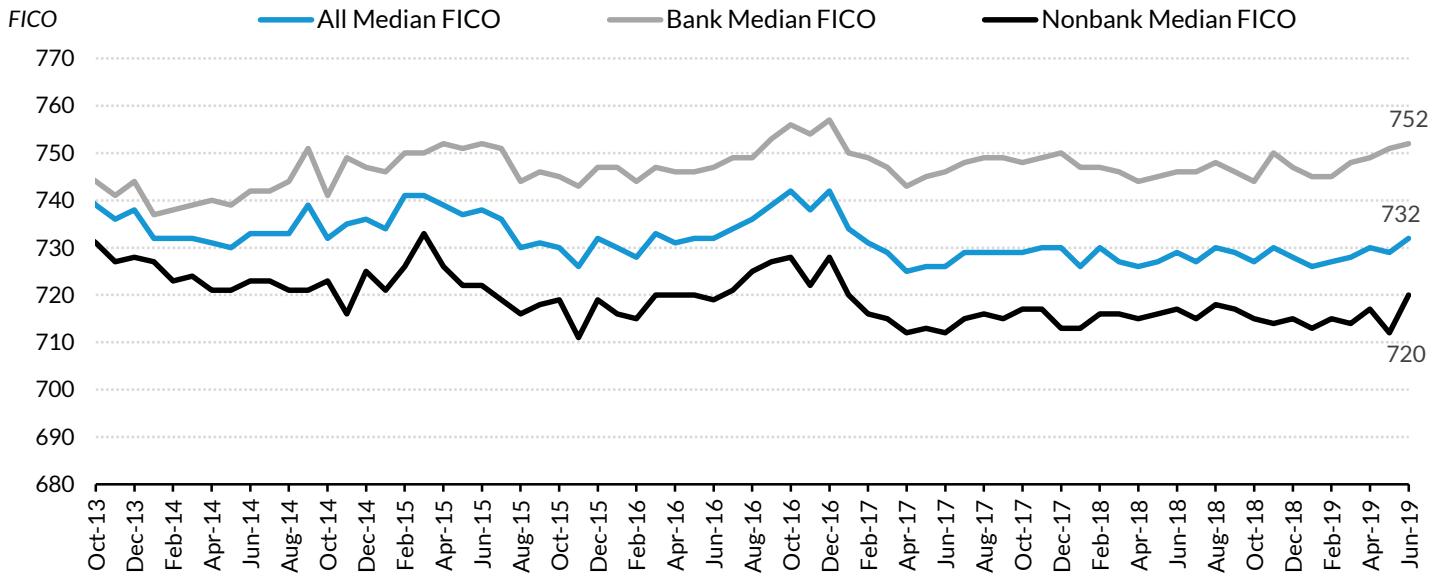


Sources: eMBS and Urban Institute. Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Nonbank Credit Box

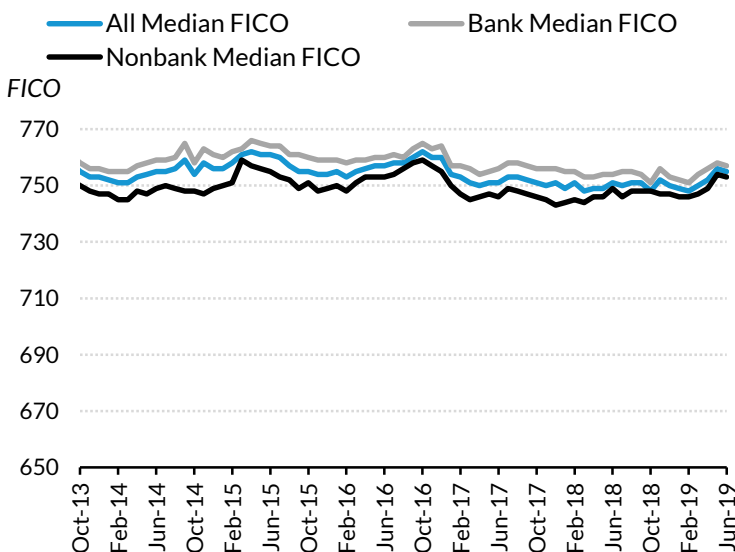
Nonbank originators have played a key role in opening up access to credit. The median GSE and the median Ginnie Mae FICO scores for loans originated by nonbanks are lower than their bank counterparts. Within the GSE space, both bank and nonbank FICOs have been relatively flat since 2014. In contrast, within the Ginnie Mae space, FICO scores for bank originations are flat since 2014 while nonbank FICOs have declined. This largely reflects the sharp cut-back in FHA lending by many banks.

Agency FICO: Bank vs. Nonbank



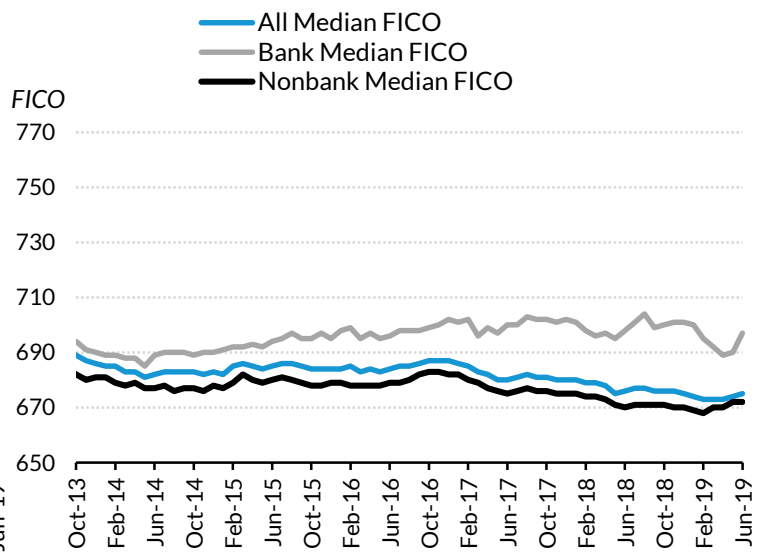
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

GSE FICO: Bank vs. Nonbank



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Ginnie Mae FICO: Bank vs. Nonbank

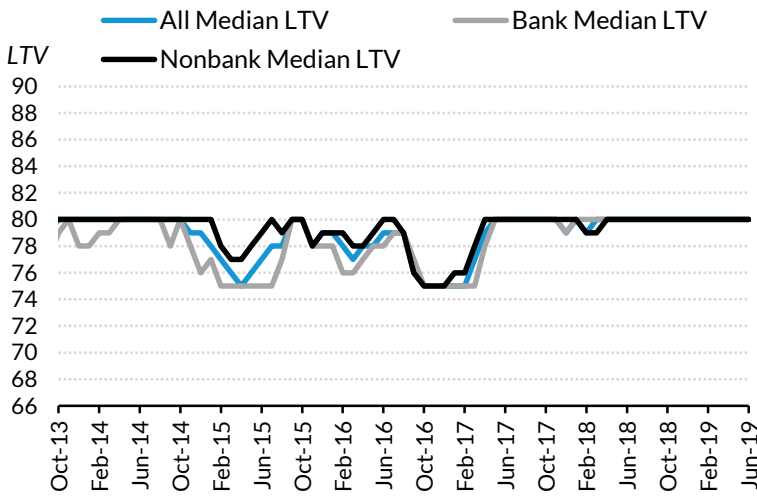


Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Nonbank Credit Box

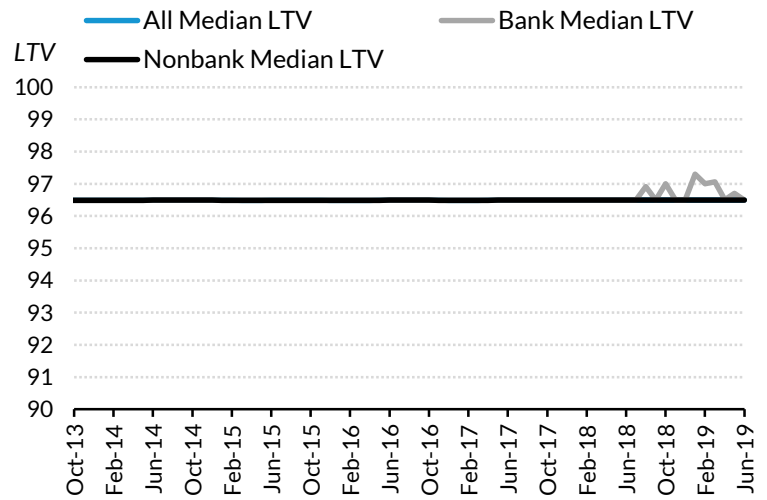
The median LTVs for nonbank and bank originations are comparable, while the median DTI for nonbank loans is higher than for bank loans, indicating that nonbanks are more accommodating in both this and the FICO dimension. Since early 2017, there has been a substantial increase in DTIs, which has partially reversed in the past few months. This is true for both Ginnie Mae and the GSEs, for banks and nonbanks. As interest rates increased, DTIs rose, because borrower payments were driven up relative to incomes. With the fall in interest rates in 2019, DTIs have dropped.

GSE LTV: Bank vs. Nonbank



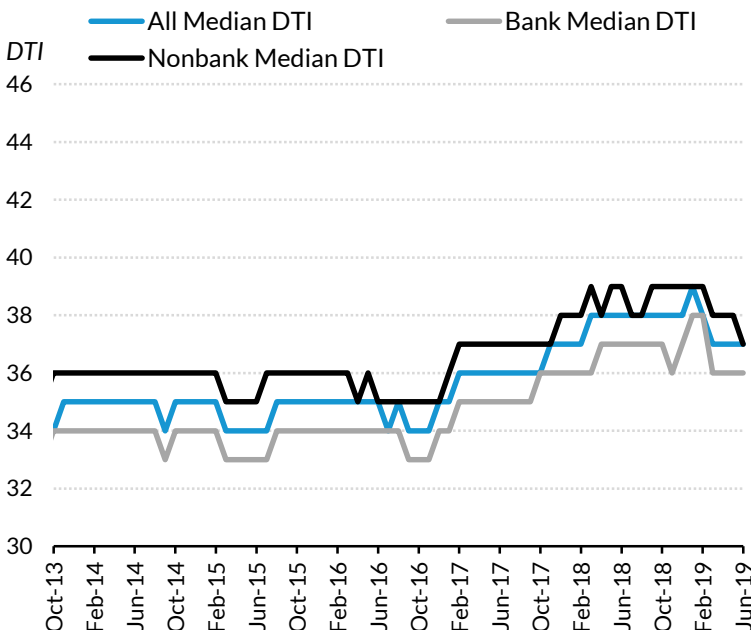
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Ginnie Mae LTV: Bank vs. Nonbank



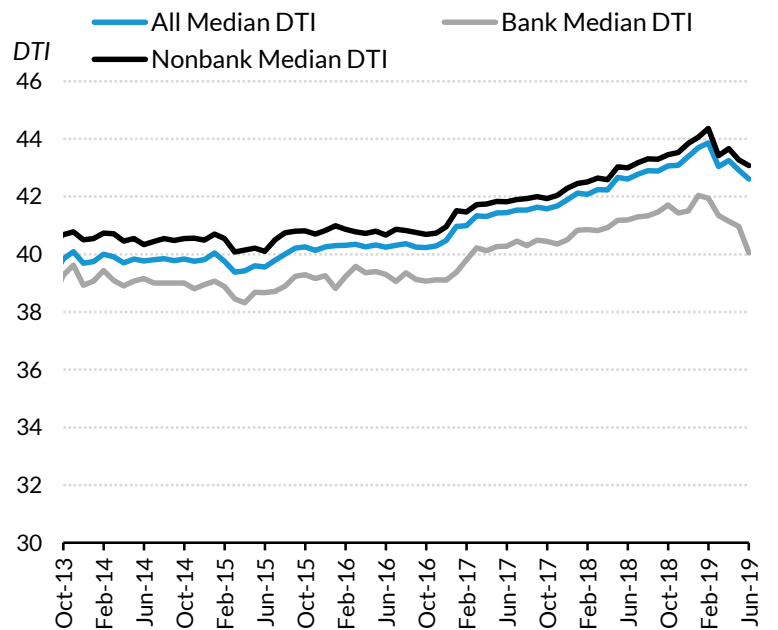
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

GSE DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Ginnie Mae DTI: Bank vs. Nonbank

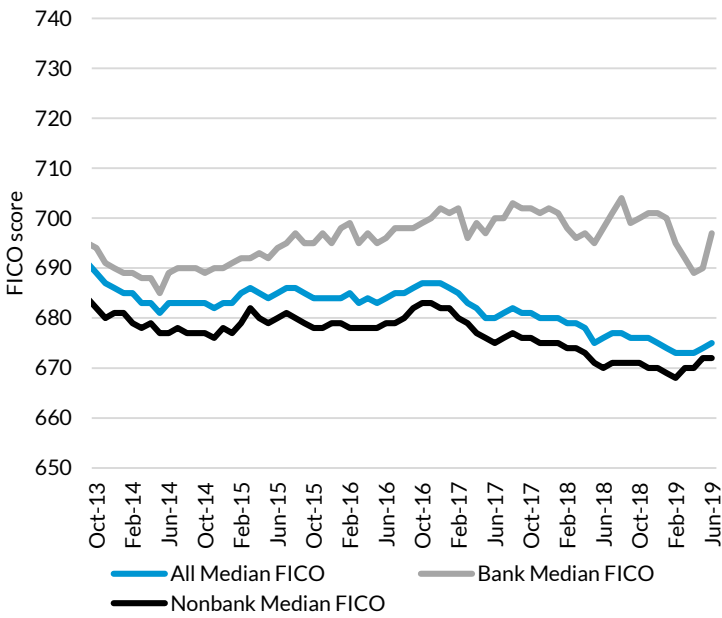


Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Ginnie Mae Nonbank Originators: Credit Box

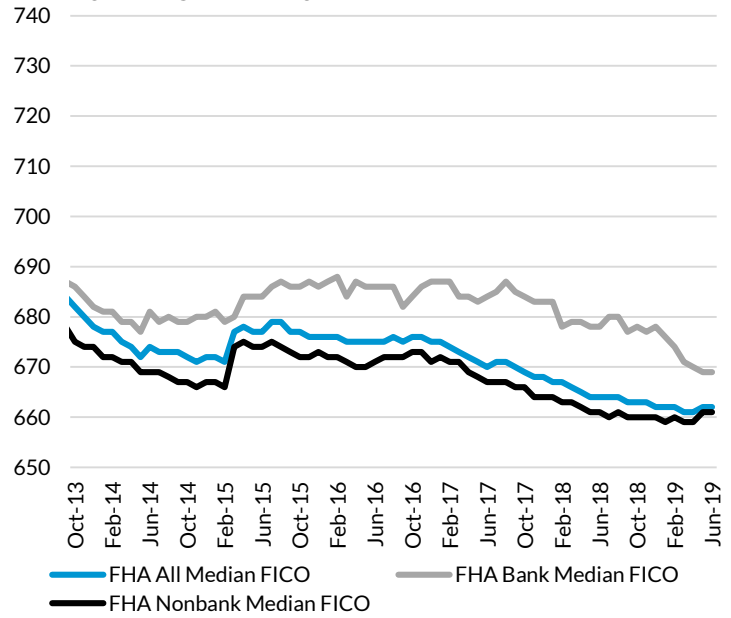
The FICO scores for both Ginnie Mae nonbank and bank originators increased in June 2019; bank FICO scores increased more than nonbank FICO scores. FICO spreads between banks and nonbanks have generally increased since 2013. The gap between banks and non-banks is very apparent in all programs backing Ginnie Mae securities: FHA, VA, and Other.

Ginnie Mae FICO Scores: Bank vs. Nonbank



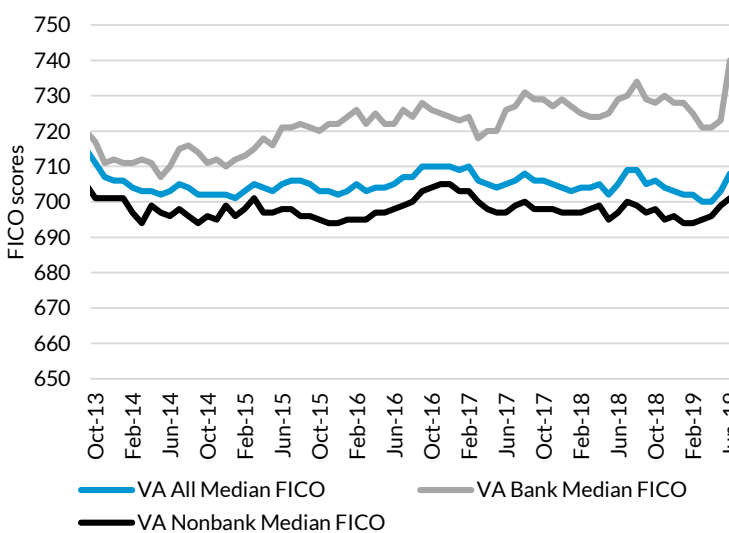
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae FHA FICO Scores: Bank vs. Nonbank



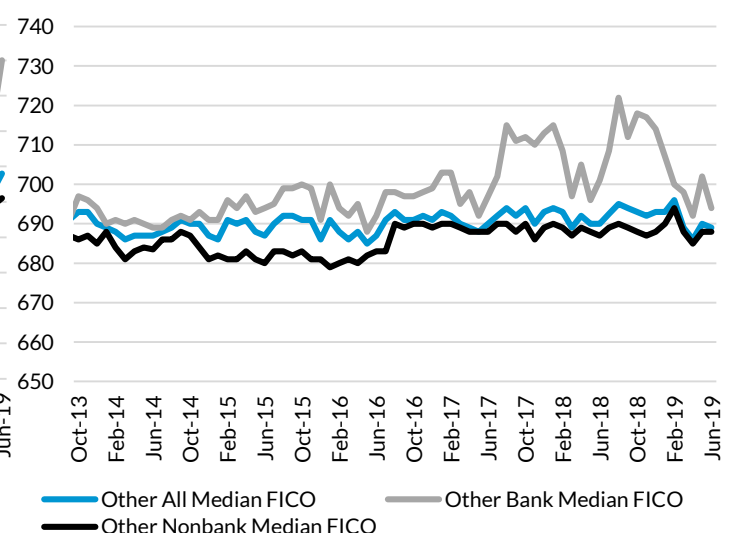
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae VA FICO Scores: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of June 2019.

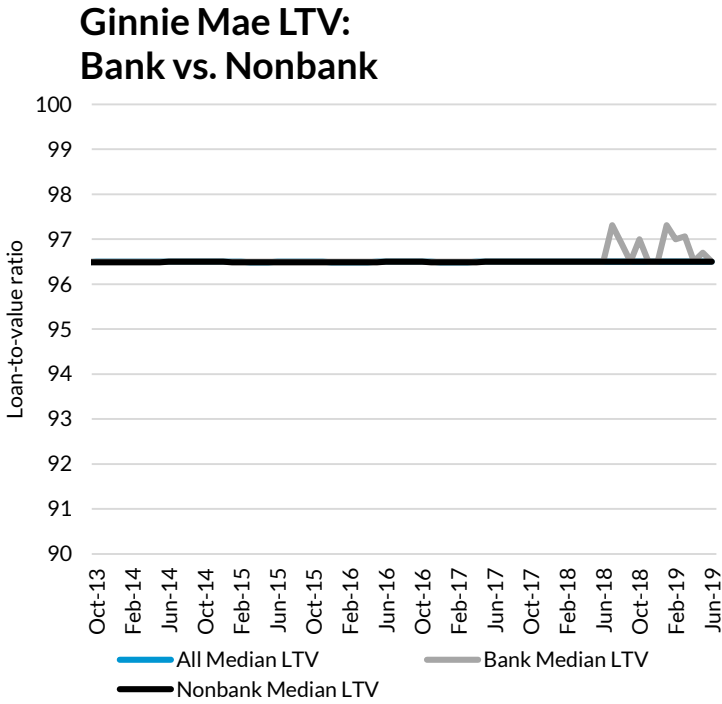
Ginnie Mae Other FICO Scores: Bank vs. Nonbank



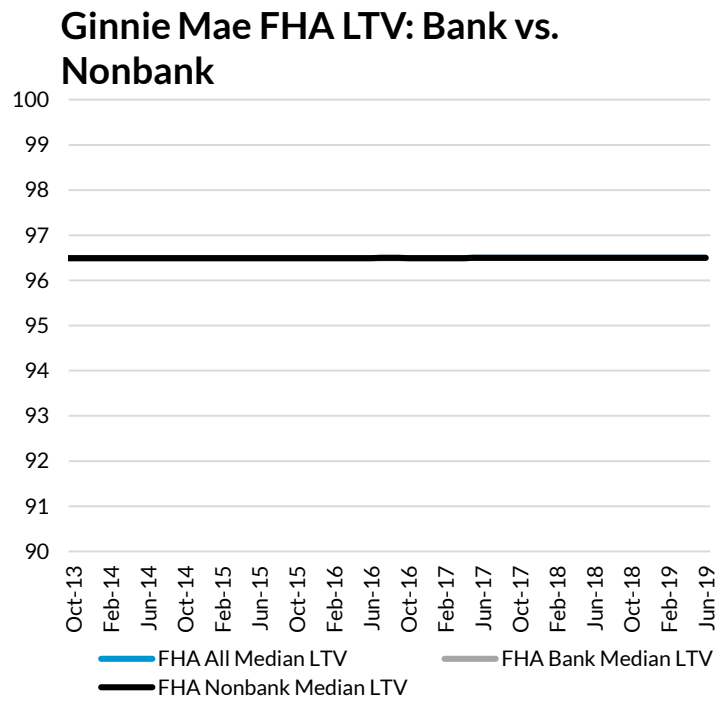
Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Ginnie Mae Nonbank Originators: Credit Box

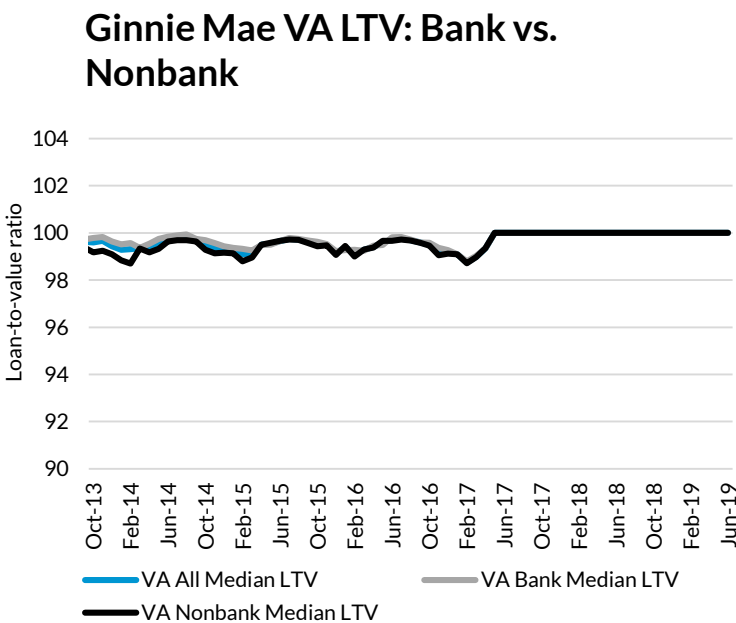
An analysis of the loans backing Ginnie Mae origination indicates that there are virtually no differences in median LTV ratios between bank originated loans and nonbank originated loans.



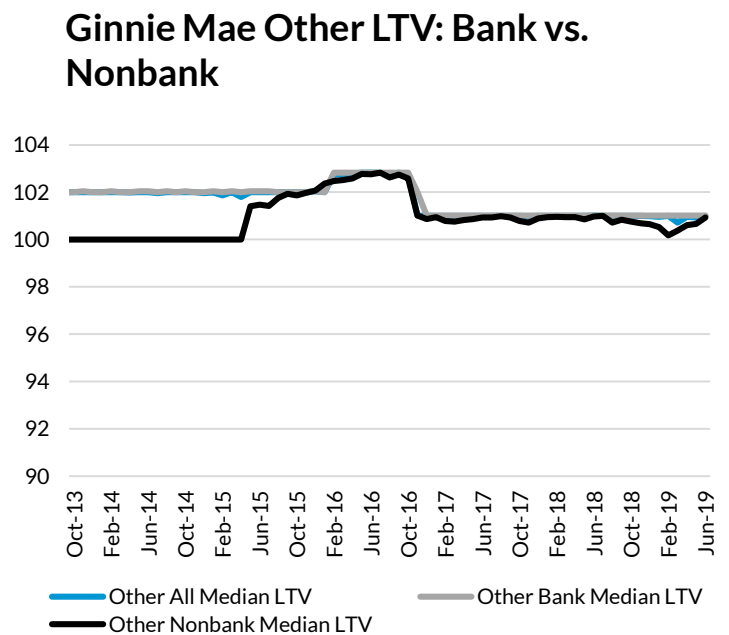
Sources: eMBS and Urban Institute Note: Data as of June 2019.



Sources: eMBS and Urban Institute Note: Data as of June 2019.



Sources: eMBS and Urban Institute Note: Data as of June 2019.

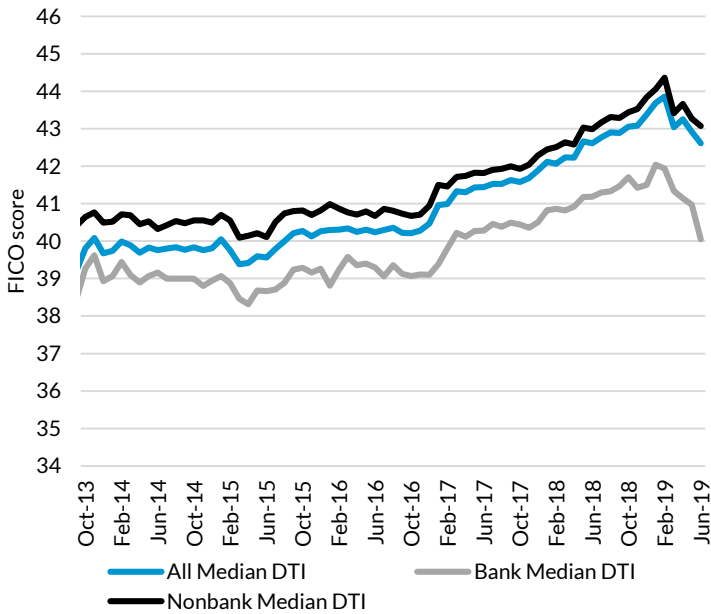


Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Ginnie Mae Nonbank Originators: Credit Box

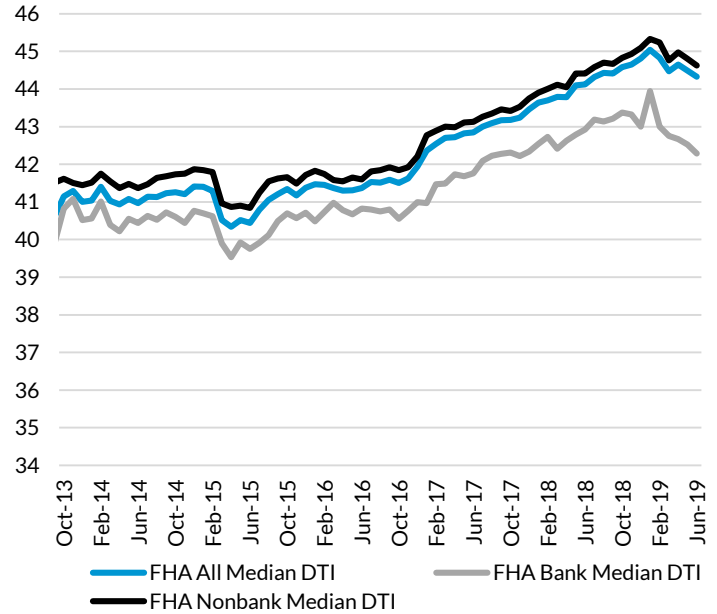
An analysis of borrowers' DTI ratios for bank versus non-bank originators indicates that the former have a lower median DTI. The DTIs for FHA and VA loans experienced notable increases since early 2017 for both bank and nonbank originations, while the Other origination DTIs stayed relatively flat. Rising DTIs are expected in a rising rate environment. After peaking in January 2019, Ginnie DTIs have trended downward, as rates have declined.

Ginnie Mae DTI: Bank vs. Nonbank



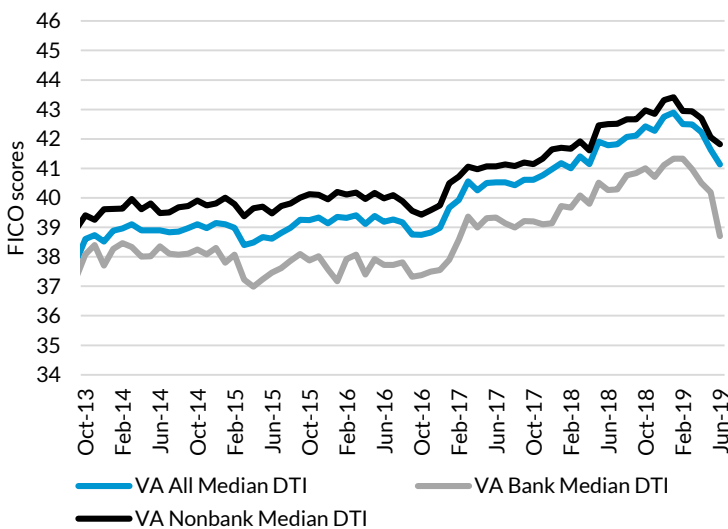
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae FHA DTI: Bank vs. Nonbank



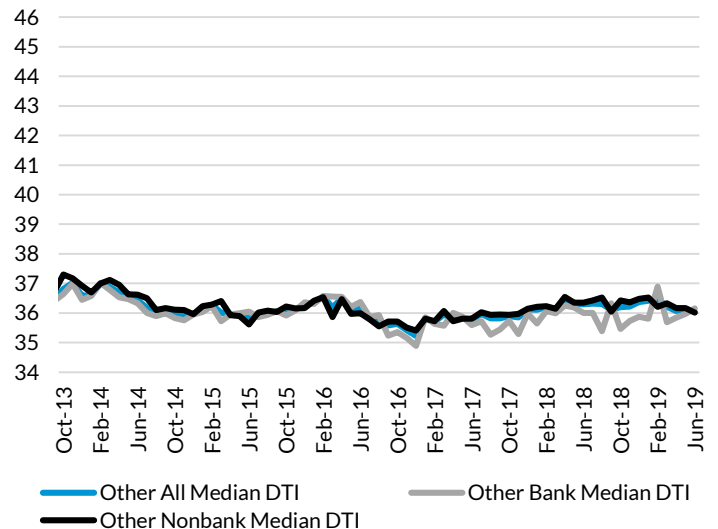
Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae VA DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: Data as of June 2019.

Ginnie Mae Other DTI: Bank vs. Nonbank



Sources: eMBS and Urban Institute Note: "Other" refers to loans insured by HUD's Office of Public and Indian Housing and the Department of Agriculture's Rural Development. Data as of June 2019.

Holders of Ginnie Mae MSR s

This table shows 30 largest owners of mortgage servicing rights (MSR) by UPB for Ginnie Mae securitizations. As of June 2019, over half (52.7 percent) of the Ginnie Mae MSR s are owned by the top six firms. The top 30 firms collectively own 85.1 percent. Nineteen of these 30 are non-depositories, the remaining 12 are depository institutions.

Top 30 Holders of Ginnie Mae Mortgage Servicing Rights (MSR s), by UPB

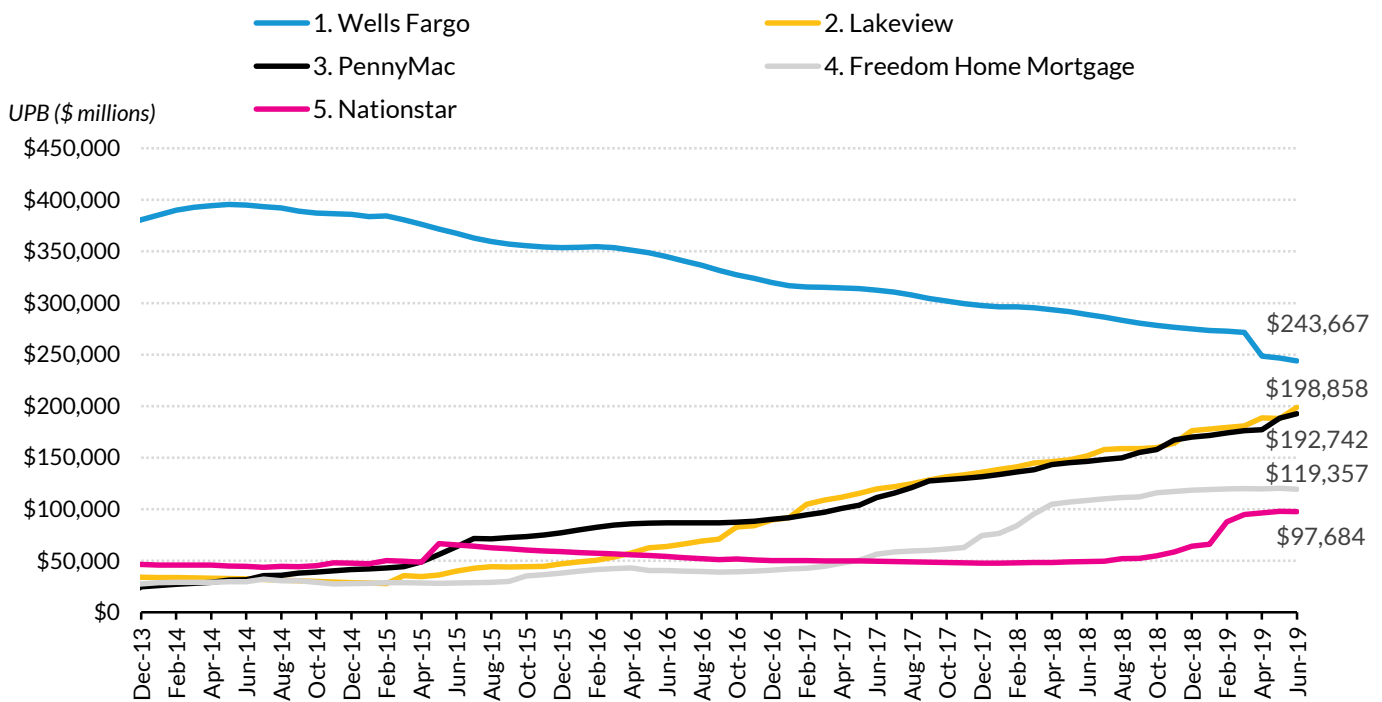
Rank	MSR Holder	UPB (\$ millions)	Share	Cumulative Share
1	Wells Fargo	\$243,667	14.0%	14.0%
2	Lakeview	\$198,858	11.4%	25.4%
3	PennyMac	\$192,742	11.0%	36.4%
4	Freedom Home Mortgage	\$119,357	6.8%	43.2%
5	Nationstar	\$97,684	5.6%	48.8%
6	Quicken Loans	\$66,958	3.8%	52.7%
7	US Bank	\$60,266	3.5%	56.1%
8	JPMorgan Chase	\$44,919	2.6%	58.7%
9	Carrington Home Mortgage	\$42,915	2.5%	61.2%
10	USAA Federal Savings Bank	\$38,221	2.2%	63.3%
11	Caliber Home Loans	\$36,895	2.1%	65.5%
12	Newrez	\$27,452	1.6%	67.0%
13	Navy Federal Credit Union	\$25,718	1.5%	68.5%
14	Amerihome Mortgage	\$23,864	1.4%	69.9%
15	Midfirst Bank	\$22,806	1.3%	71.2%
16	The Money Source	\$22,465	1.3%	72.5%
17	M&T Bank	\$20,677	1.2%	73.6%
18	Suntrust	\$19,009	1.1%	74.7%
19	Ditech Financial	\$18,119	1.0%	75.8%
20	Roundpoint	\$17,704	1.0%	76.8%
21	Home Point Financial	\$17,528	1.0%	77.8%
22	Branch Banking and Trust	\$16,091	0.9%	78.7%
23	Guild Mortgage	\$16,087	0.9%	79.6%
24	PHH Mortgage	\$15,173	0.9%	80.5%
25	Loan Depot	\$14,969	0.9%	81.4%
26	Flagstar Bank	\$14,583	0.8%	82.2%
27	Pingora	\$14,196	0.8%	83.0%
28	Citizens Bank	\$12,499	0.7%	83.7%
29	Bank of America	\$11,908	0.7%	84.4%
30	Fifth Third Bank	\$11,751	0.7%	85.1%

Sources: eMBS and Urban Institute. Note: Data as of June 2019.

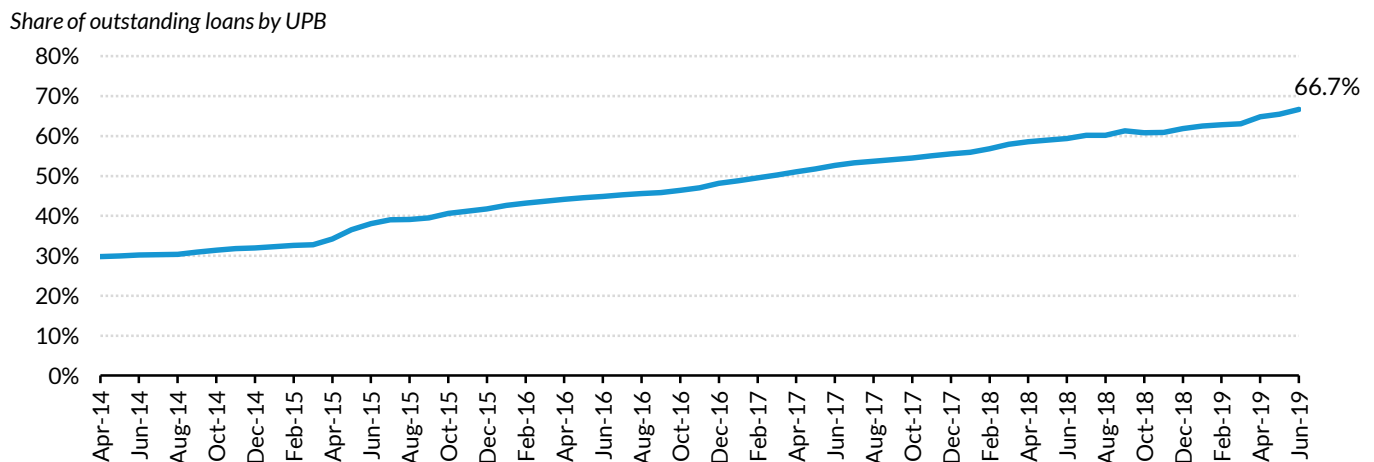
Holders of Ginnie Mae MSR

The composition of the largest owners of Ginnie Mae MSR has evolved quite a bit over time. In November 2013, Wells Fargo and JP Morgan Chase were the two largest owners of Ginnie Mae MSRs, holding \$375 billion and \$139 billion in servicing UPB respectively. Although Wells Fargo is still the largest player, its portfolio has shrunk to \$244 billion. Lakeview, PennyMac Freedom Home Mortgage, and Nationstar (all nonbanks) make up the remainder of the top five largest holders of MSRs, owning \$199 billion, \$193 billion, \$119 billion, and \$98 billion respectively as of June 2019. As of June 2019, nonbanks collectively owned servicing rights for 66.7 percent of all outstanding unpaid principal balance guaranteed by Ginnie Mae. In December 2013, the nonbank share was much smaller at 27.7 percent.

Top 5 MSR Holders: Outstanding Ginnie Mae Loans by UPB



Share of Ginnie Mae MSRs held by Nonbanks



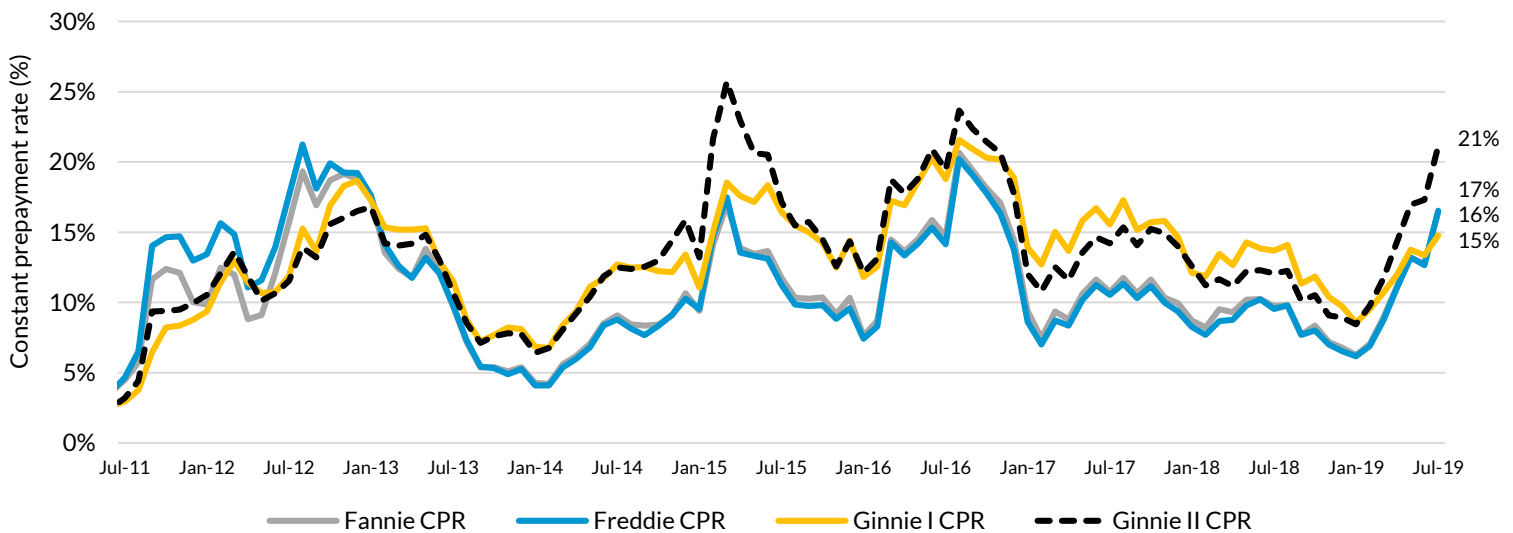
Sources: eMBS and Urban Institute. Note: Data as of June 2019.

Prepayments

Prepayments on Ginnie Mae securities were lower than on GSE securities from 2011 through early-2013, but have been higher since. These increased Ginnie speeds reflect the growing share of VA loans, which tend to prepay faster than either FHA or GSE loans. In addition, FHA puts fewer restrictions on streamlined refinances, and unlike GSE streamline refinances, requires no credit report and no appraisal. Some of the upfront mortgage insurance premium can also be applied to the refinanced loan.

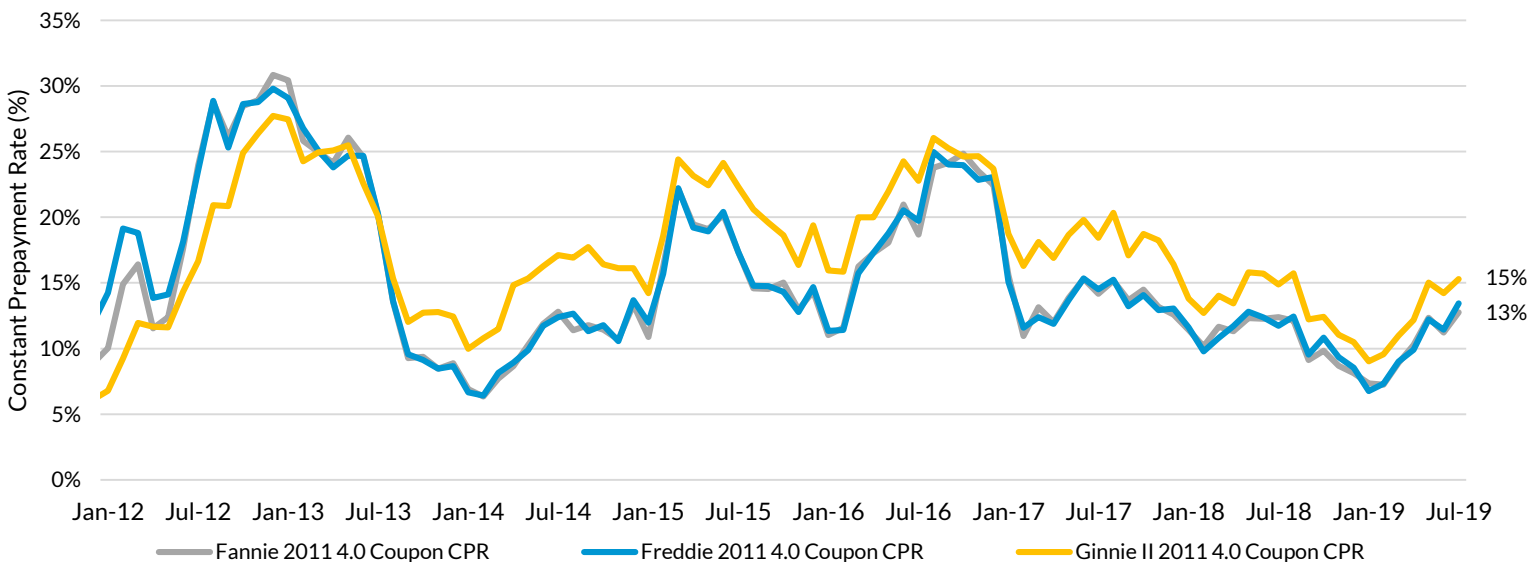
With the increase in interest rates since November 2016, the prepayment speeds for all agencies have slowed down considerably. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economical to refinance, the small month to month variation in speeds reflected seasonality, changes in day count and changes in rates. With the drop in rates beginning in late 2018, we have seen some pick up in prepayment activity in recent months; we expect more as borrowers realize and act on the opportunity to refinance at attractive rates.

Aggregate Prepayments



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

2011 Issued 4.0 Coupon CPR



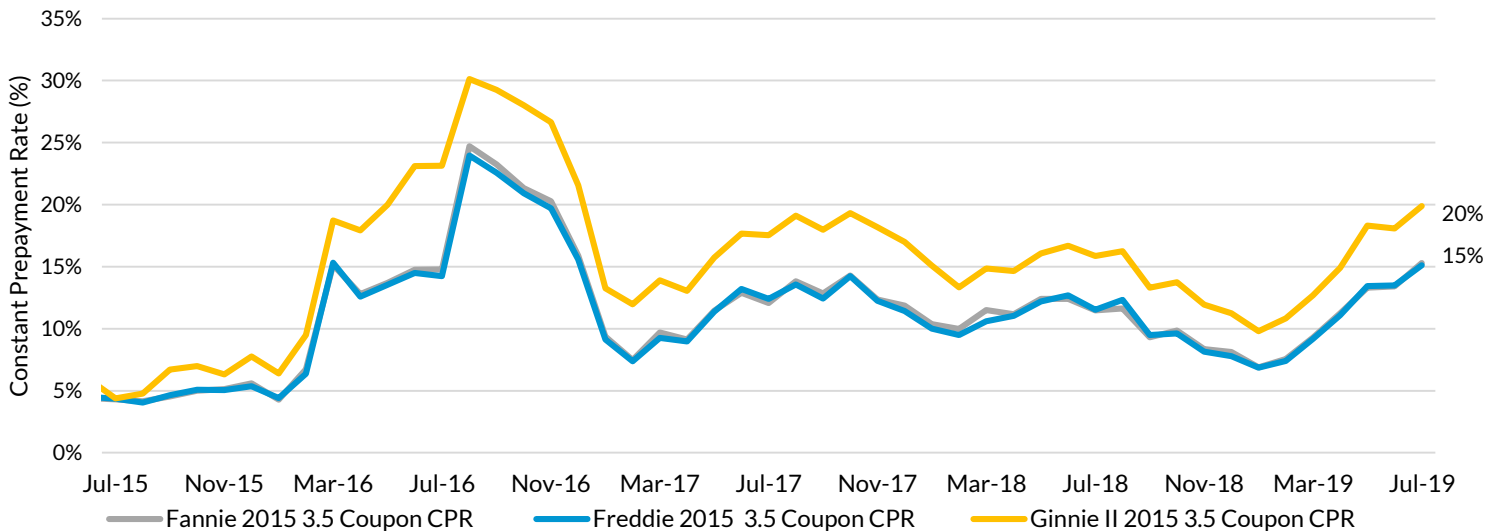
Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

Prepayments

The 2015 Ginnie II 3.5s and the 2016 Ginnie II 3.0s, the largest coupon cohorts of those vintage years, have prepaid consistently faster than their conventional counterparts. 2015 and 2016 originations are more heavily VA loans than the 2011 origination shown on the preceding page. VA loans prepay faster than either FHA or GSE loans. The FHA streamlined programs are likely another contributor to the faster speeds.

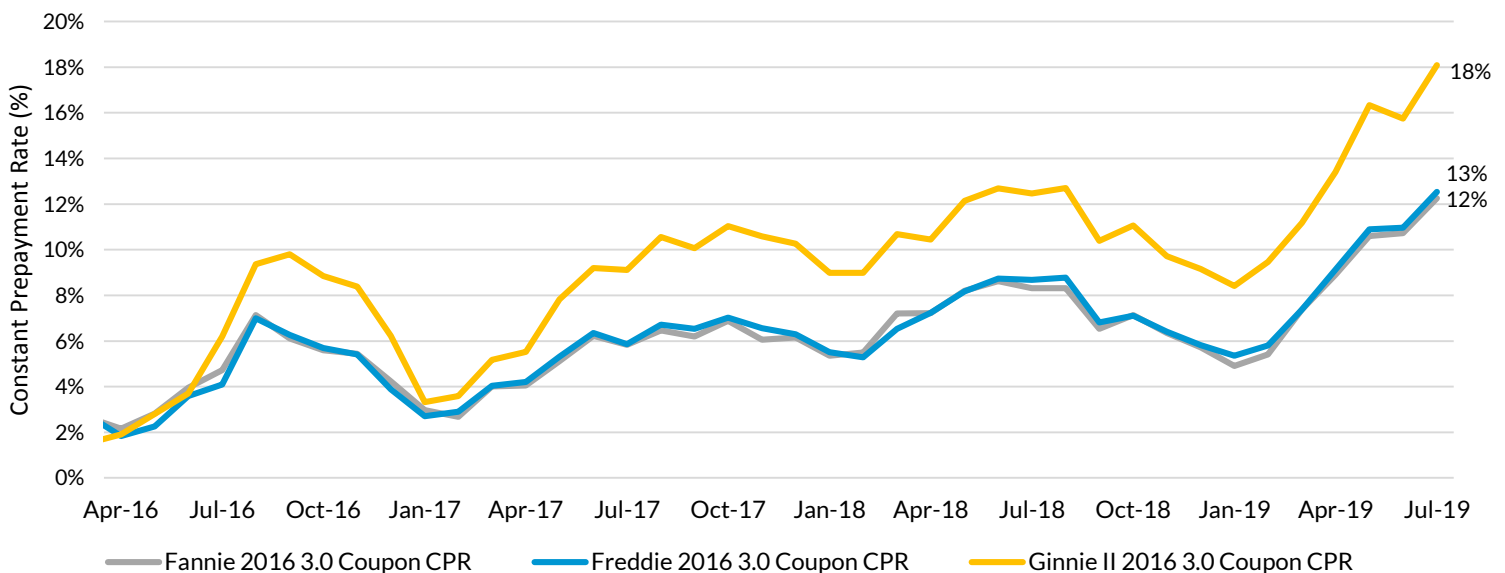
With the increase in interest rates over the 2 year period beginning in November 2016, the prepayment speeds for all agency MBS had slowed. From late 2016 to late 2018, with the bulk of the mortgage universe finding it non-economic to refinance, the muted month to month variations in speeds reflected seasonality, changes in day count and changes in mortgage interest rates. With the drop in rates beginning in late 2018, we have seen some pick up in prepayment activity in recent months; we expect more pickup as borrowers realize and act on the opportunity to refinance at attractive rates.

2015 Issued 3.5 Coupon CPR



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

2016 Issued 3.0 Coupon CPR

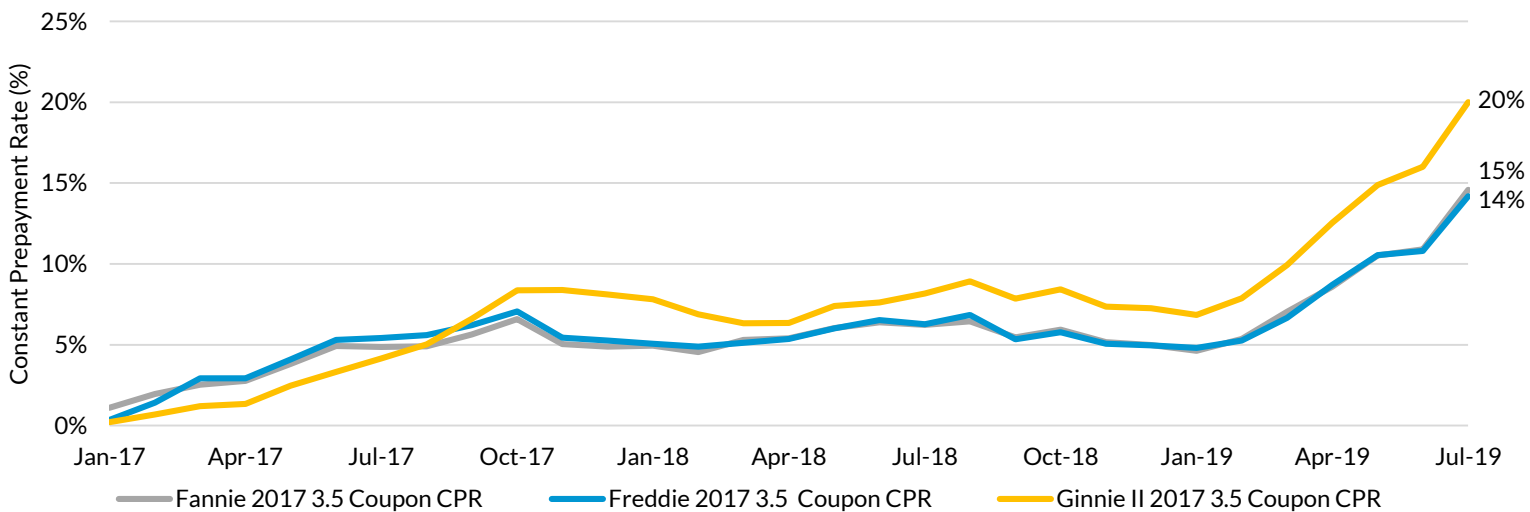


Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

Prepayments

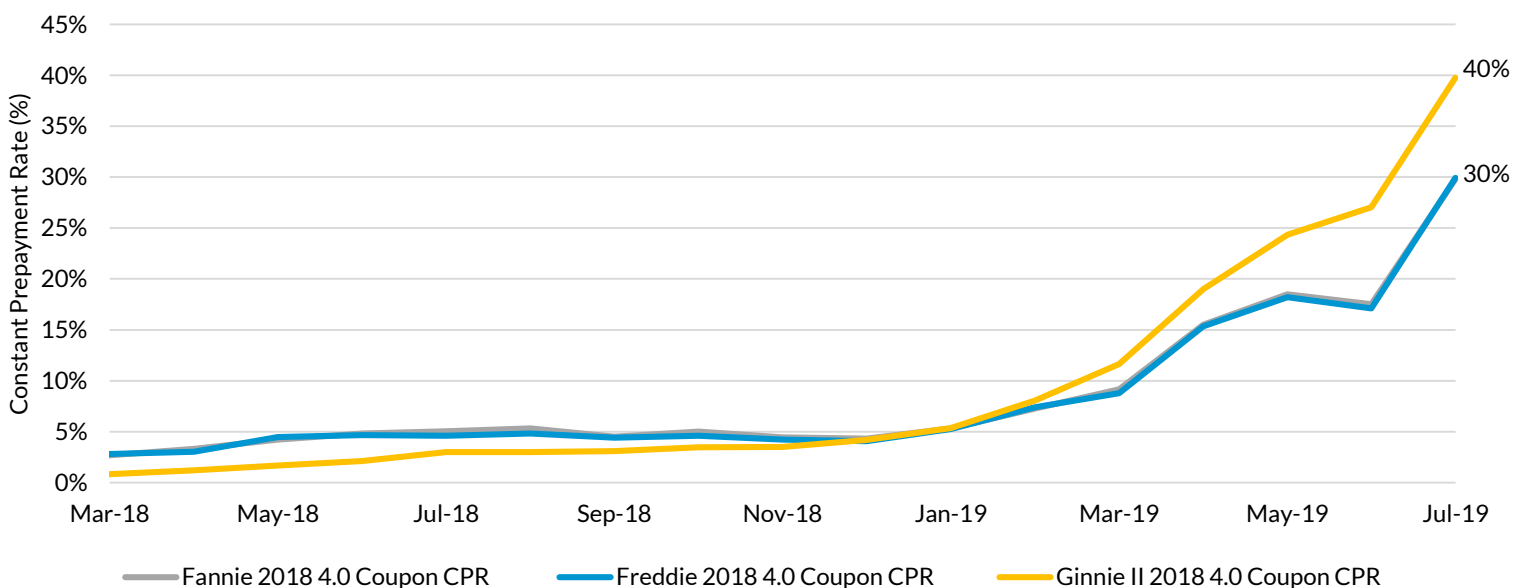
Ginnie Mae securities season more slowly than their conventional counterparts; they generally have lower prepayments in the early months. The charts below show the behavior of the 2017-issued 3.5s and the 2018-issued 4.0s, the largest coupon cohorts of those vintage years. Despite slower seasoning, 2017 Ginnie II 3.5s have been prepaying faster than their conventional counterparts since late 2017, due primarily to fast VA prepayment speeds. In comparison, the 2018 Ginnie II 4.0s prepaid more slowly than their conventional counterparts until January of 2019. In 2019, speeds of all 2018 4.0s have accelerated, and Ginnie II speeds have accelerated more than their conventional counterparts.

2017 Issued 3.5 Coupon CPR



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

2018 Issued 4.0 Coupon CPR

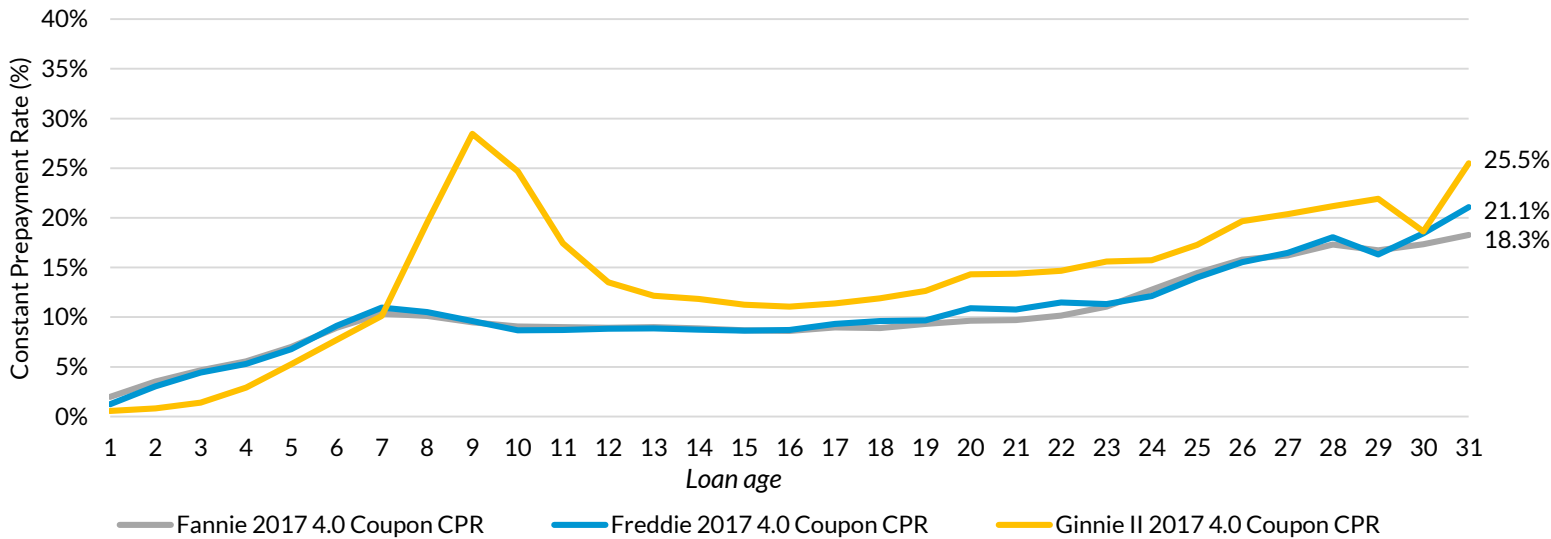


Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

Prepayments

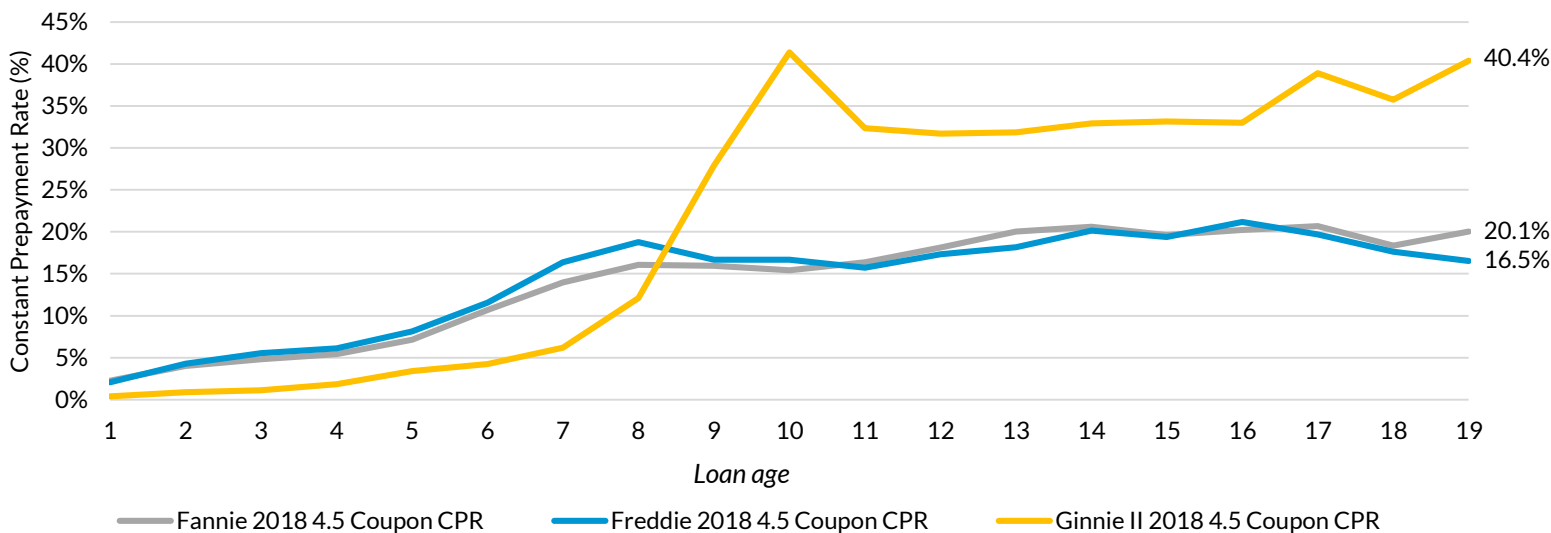
The charts below show the prepayment speeds by loan age for 2017 Ginnie II 4.0s and 2018 Ginnie II 4.5s—the cohorts 50 basis points above the largest coupon cohort for those years. Prepayment speeds on the 2017 Ginnie II 4.0s jumped up sharply at the 7-9 month loan age, reflecting abuse of the VA Streamlined Refi program (IRRRL). The 2018 Ginnie II 4.5s do not show increased speeds until the 9-10 month point; reflecting both the effect of lower rates and the actions taken by both Ginnie Mae and the VA in H1 2018 to curb this abuse. Ginnie Mae actions have included suspending a few servicers whose VA prepayment speeds are especially high from selling VA loans into Ginnie Mae II securities, as well as rewriting the pooling requirements so that if loans that do not meet the seasoning requirement are refinanced, the new loan is ineligible for securitization. Ginnie’s latest action on this front, effective for securities issued on or after Nov 1 2019, will bar the securitization of over 90% LTV cash-out refinances into Ginnie I and Ginnie II pools (custom pools excepted.) In addition, VA has implemented a net tangible benefit test, requiring the lender to show the borrower has obtained a benefit from the refinance. Even so, the recent experience of the 2018 Ginnie II 4.5s indicates they are much more responsive to interest rate changes than conventional mortgages.

2017 Issued 4.0 Coupon CPR, by Loan Age



Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

2018 Issued 4.5 Coupon CPR, by Loan Age



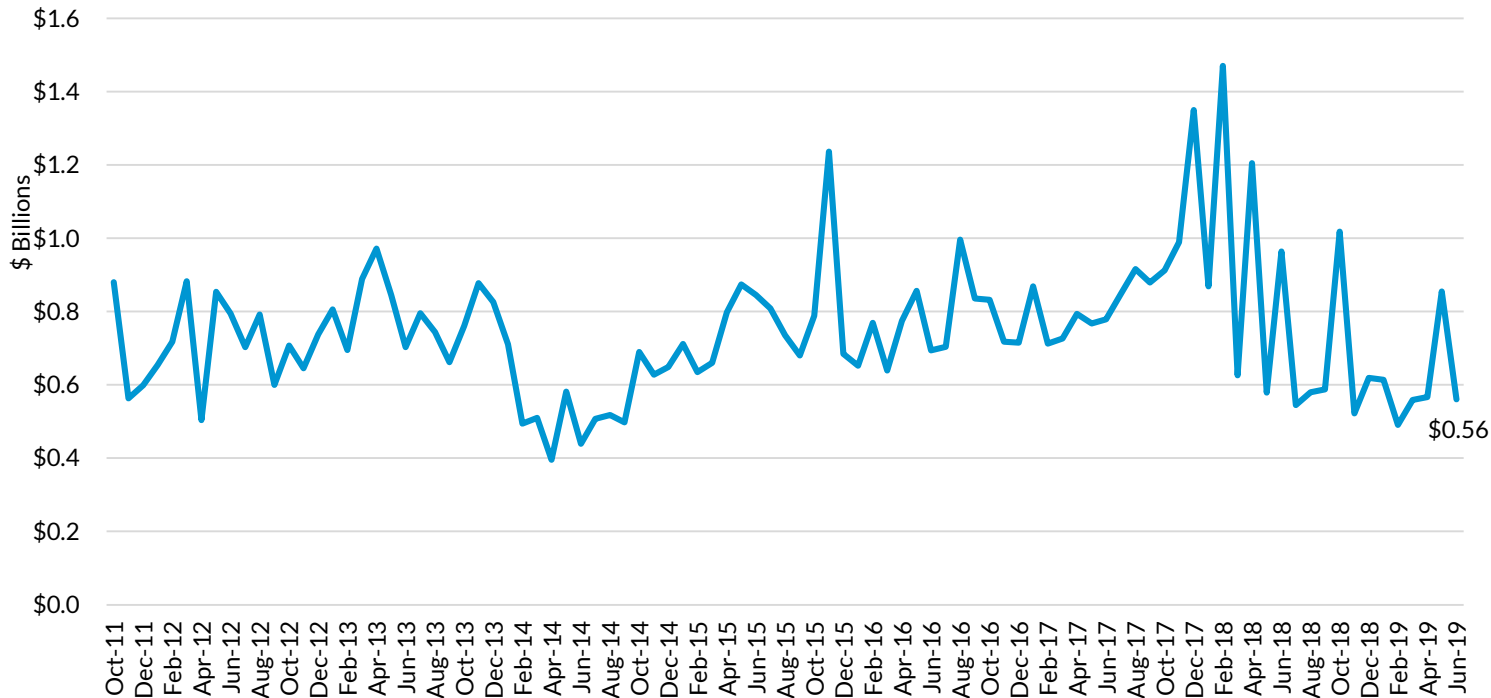
Sources: Credit Suisse and Urban Institute. Note: Data as of July 2019.

Other Ginnie Mae Programs

Reverse Mortgage Volumes

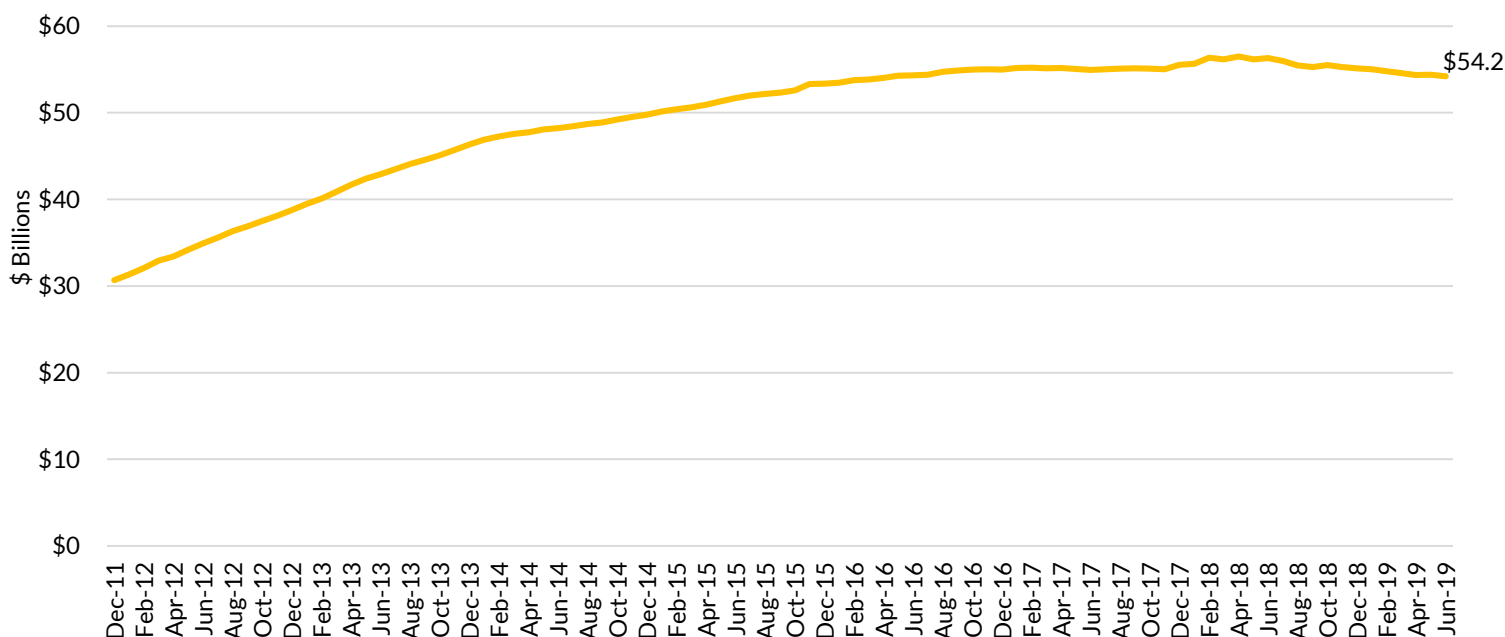
Ginnie Mae reverse mortgage issuance has been volatile in recent months; after increasing in May, the June 2019 volume fell to \$0.56 billion. Issuance has been declining since early 2018 largely due to the implementation of the new, lower principal limit factors. In June 2019, outstanding reverse mortgage securities totaled \$54.2 billion, lower compared to recent past, reflecting a lower volume of new issuances.

HMBS Issuance Volume



Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2019.

HMBS Outstanding



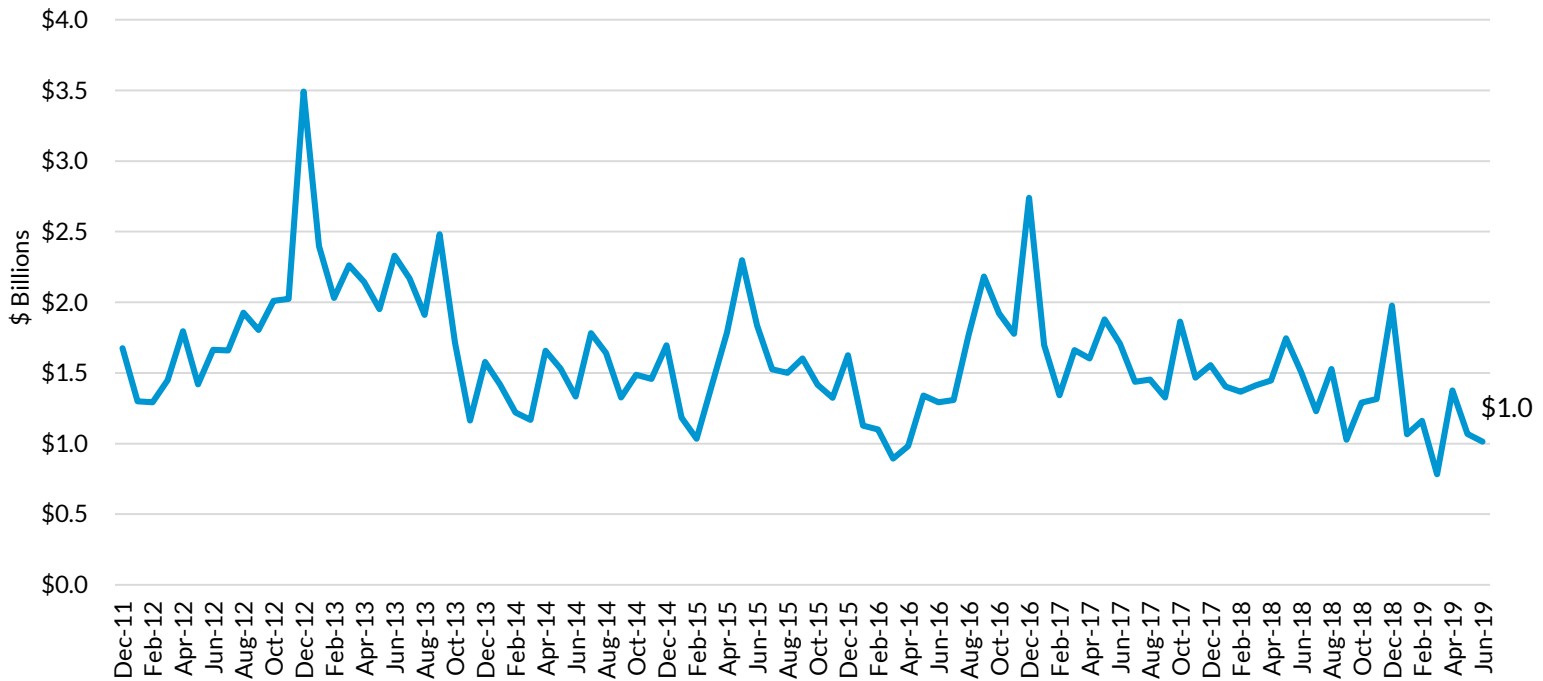
Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2019.

Other Ginnie Mae Programs

Multifamily Market

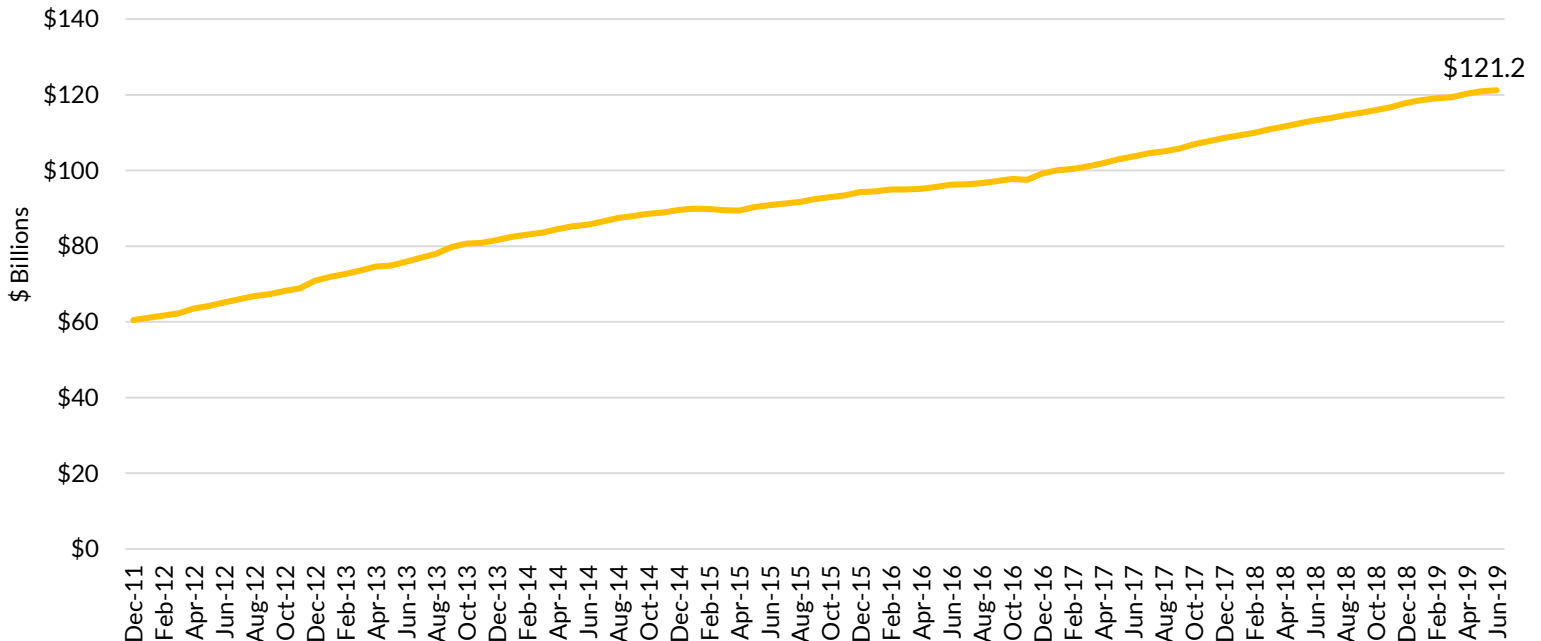
Ginnie Mae multifamily issuance volume in June 2019 totaled \$1.0 billion, a small decrease from the past month and below average issuance levels over the past 18 months. Outstanding multifamily securities totaled \$121.2 billion in June.

Ginnie Mae Multifamily MBS Issuance



Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2019.

Ginnie Mae Multifamily MBS Outstanding

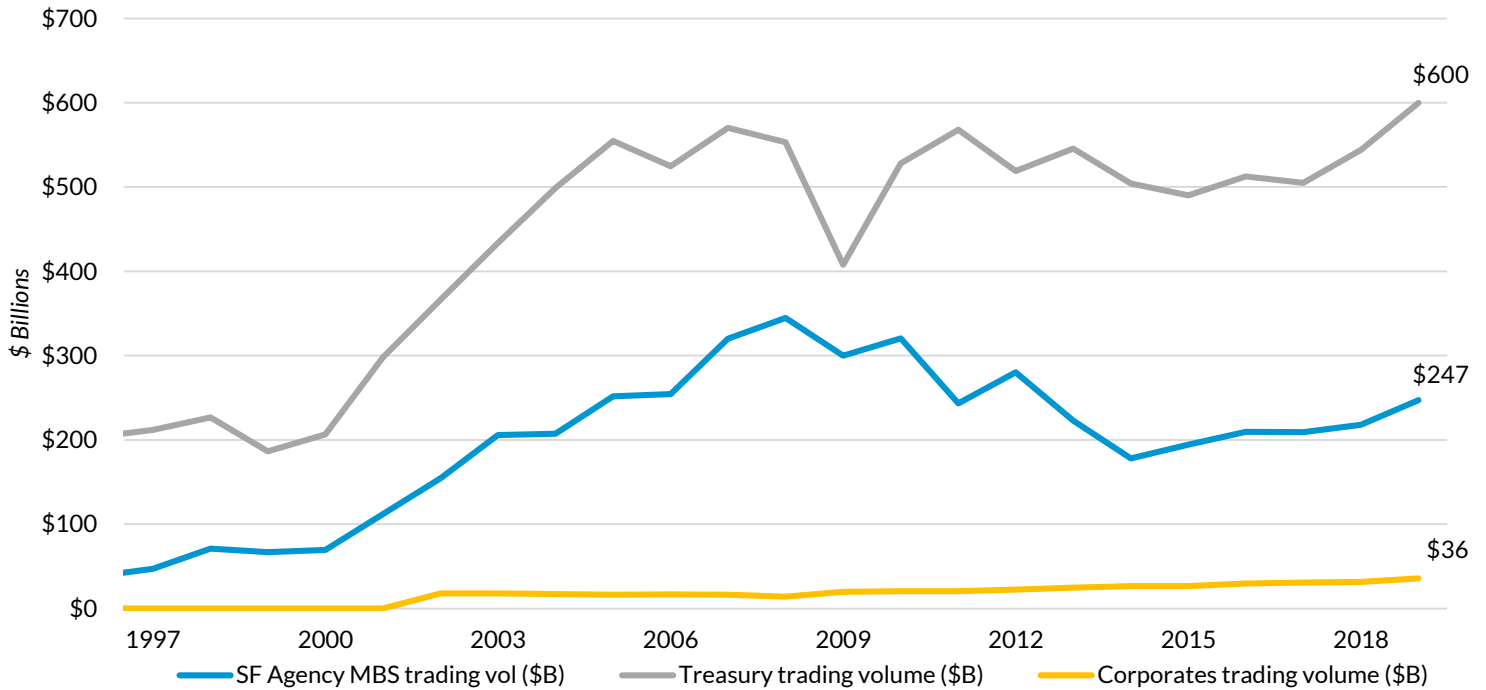


Sources: Ginnie Mae and Urban Institute. Note: Data as of June 2019.

Market Conditions

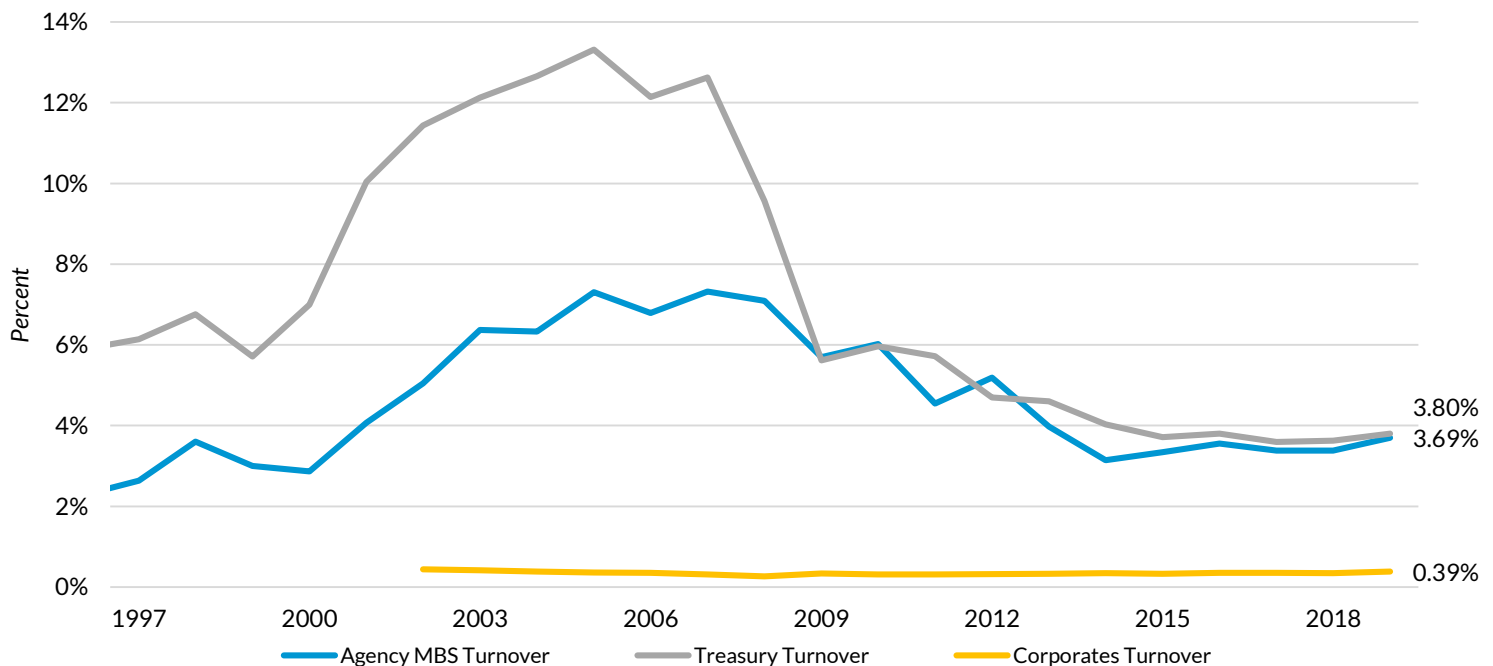
Agency MBS trading volume was \$247 billion/day on average 2019 YTD, more robust than in the 2014-2018 period, but well below the pre-crisis peak of \$345 billion in 2008. In contrast, average daily trading volume for Treasuries now exceeds the pre-crisis peak. Agency MBS turnover in 2019 YTD also has been slightly higher than the 2014-2018 period; in the first five months of 2019, average daily MBS turnover was 3.69 percent, above the 2018 average of 3.39 percent. Both average daily mortgage and Treasury turnover are down from their pre-crisis peaks. Corporate turnover is miniscule relative to either Agency MBS or Treasury turnover.

Average Daily Fixed Income Trading Volume by Sector



Sources: SIFMA and Urban Institute. Note: Data as of July 2019.

Average Daily Turnover by Sector

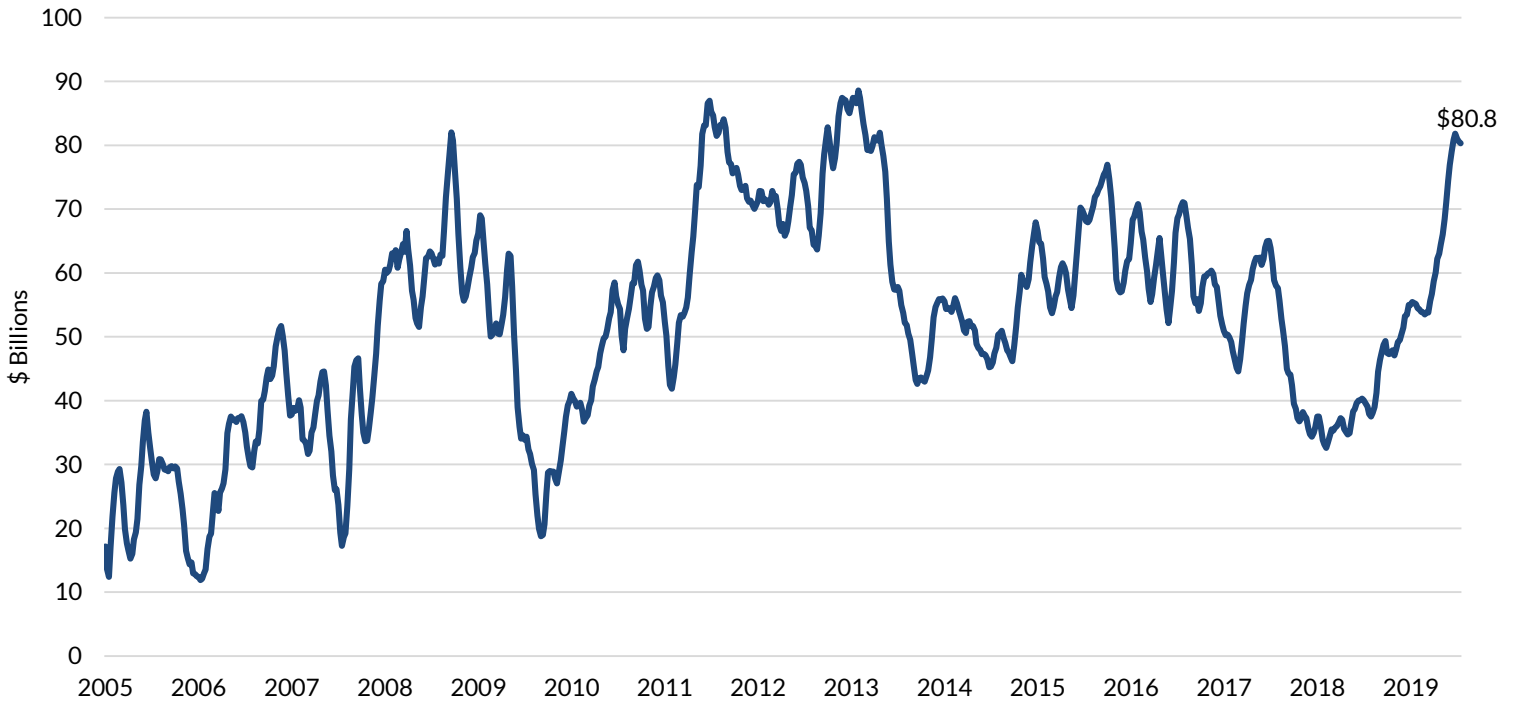


Sources: SIFMA and Urban Institute. Note: Data as of July 2019.

Market Conditions

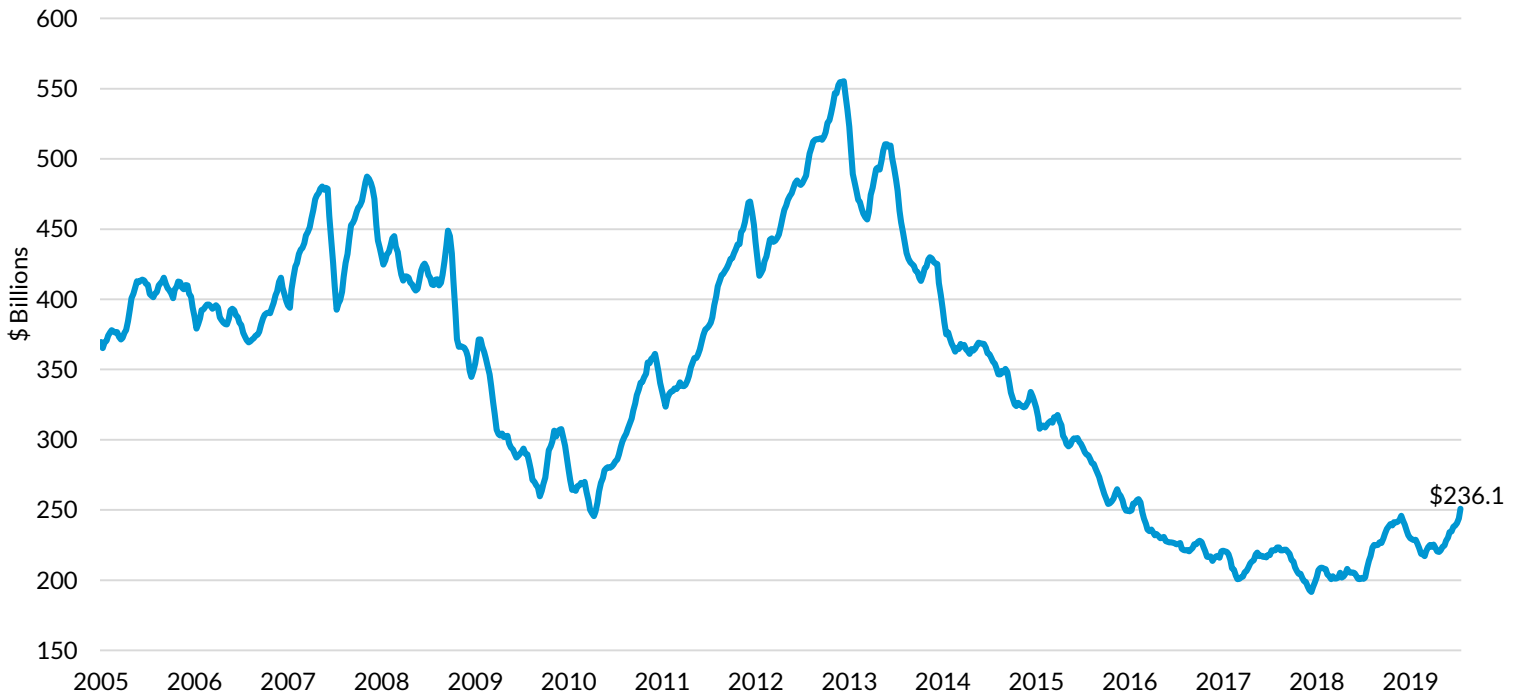
Dealer net positions are near their post-crisis highs. By contrast, dealer gross positions have fallen dramatically. The volume of repurchase activity is up from the near 13-year low in 2017. The large decline through time reflects banks cutting back on lower margin businesses.

Dealer Net Positions: Federal Agency and GSE MBS



Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of July 2019.

Repo Volume: Securities In



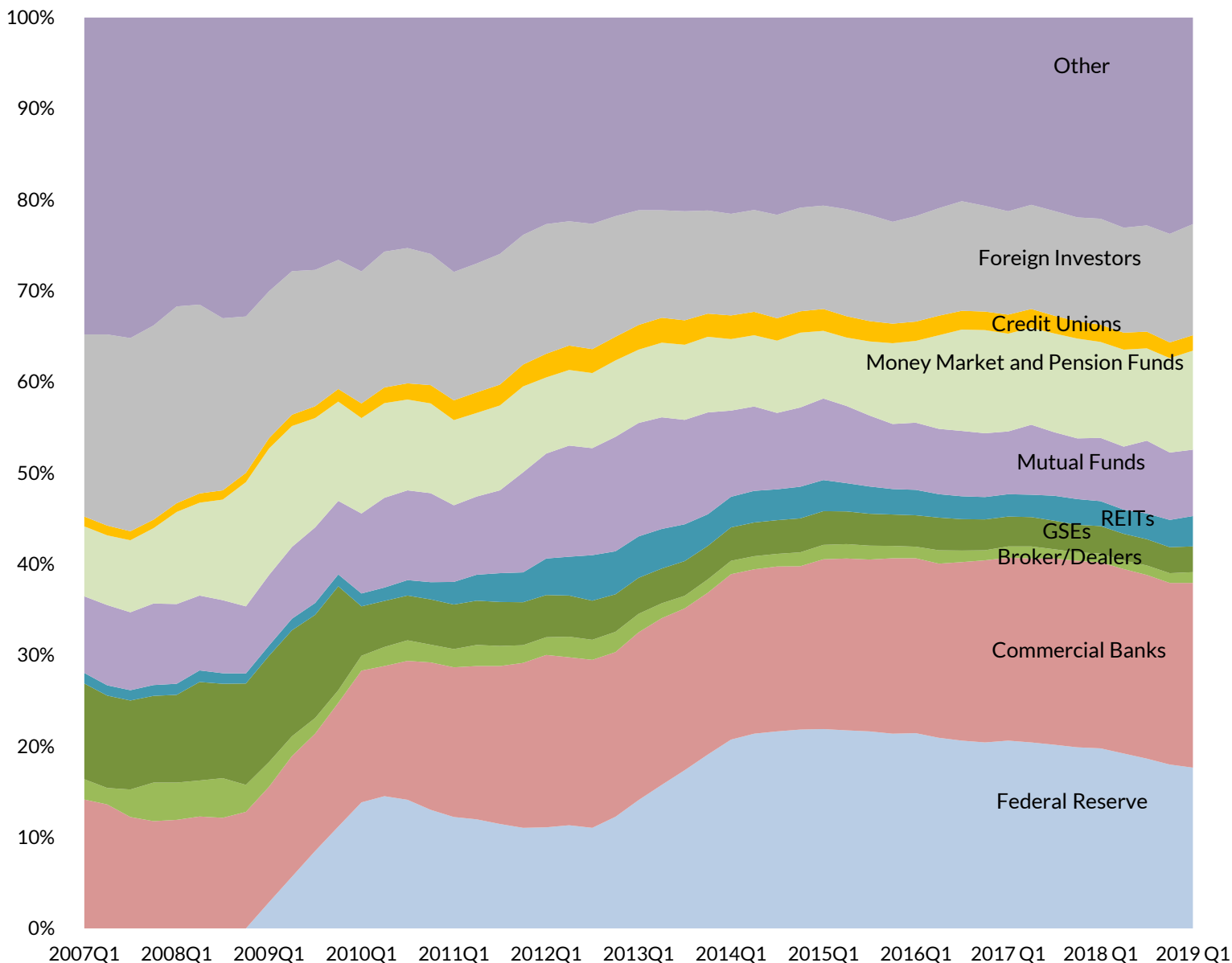
Sources: Federal Reserve Bank of New York Primary Dealer Statistics and Urban Institute. Note: Data as of July 2019.

MBS Ownership

The largest holders of agency debt (Agency MBS + Agency notes and bonds) include the Federal Reserve (18 percent), commercial banks (20 percent) and foreign investors (12 percent). The broker/dealer and GSE shares are a fraction of what they once were.

Who owns Total Agency Debt?

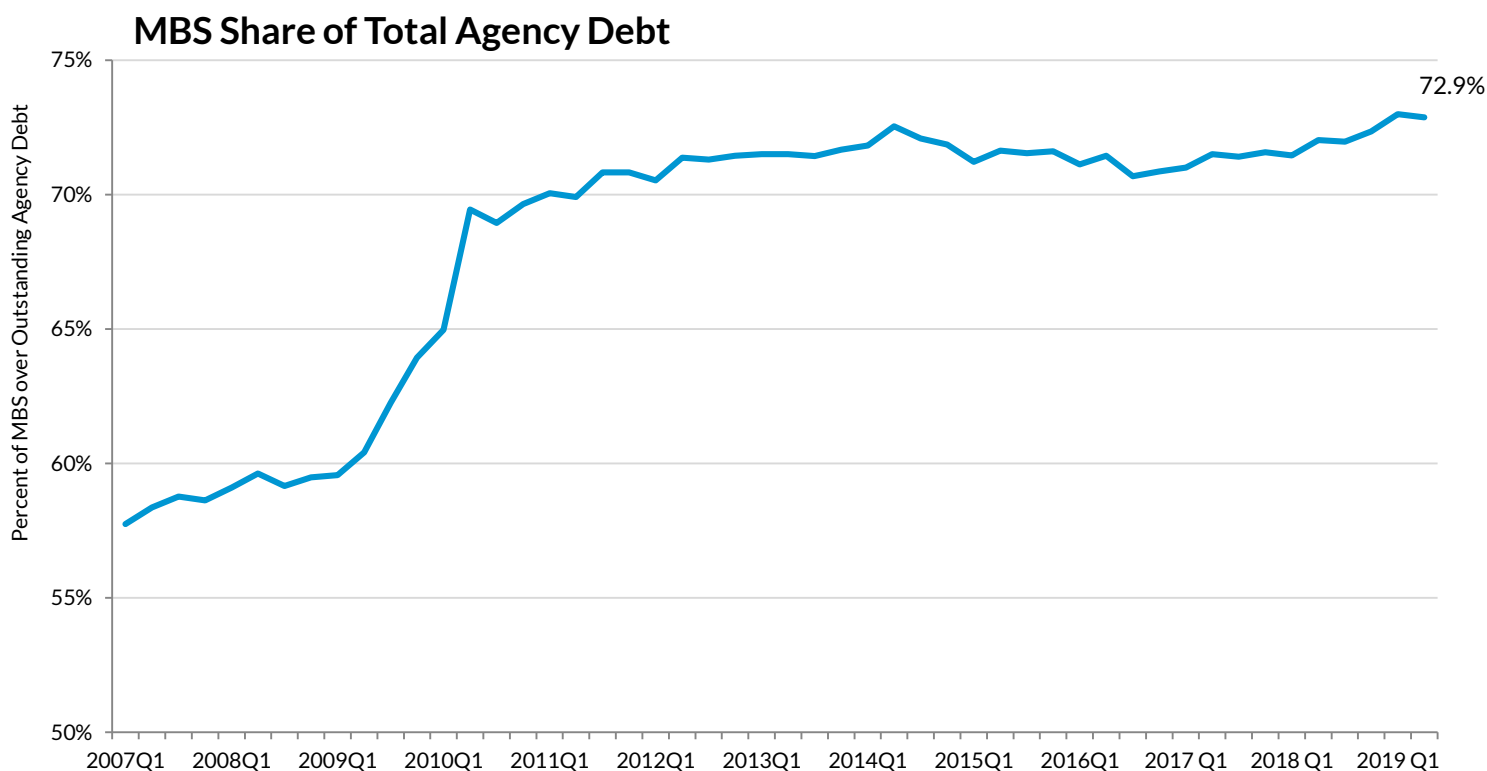
Share of Total Agency Debt by Owner



Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q1 2019.

MBS Ownership

As Fannie and Freddie reduce the size of their retained portfolio, fewer agency notes and bonds are required to fund that activity, hence the MBS share of total agency debt increases. As of Q1 2019, the MBS share of total agency debt stood at 72.9 percent. Commercial banks are now the largest holders of Agency MBS. Out of their \$2.0 trillion in holdings as of the end of July 2019, \$1.5 trillion was held by the top 25 domestic banks.



Sources: Federal Reserve Flow of Funds and Urban Institute. Note: Data as of Q1 2019.

	Commercial Bank Holdings (\$Billions)								Week Ending			
	Jun-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul 3	Jul 10	Jul 17	Jul 24
Largest 25 Domestic Banks	1,307.8	1,359.5	1,388.3	1,399.2	1,411.9	1,431.5	1,433.6	1,456.3	1,465.5	1,466.0	1,449.6	1,456.2
Small Domestic Banks	484.2	484.5	491.5	492.0	494.9	498.9	499.3	506.3	512.0	511.0	512.7	514.1
Foreign Related Banks	31.2	27.4	25.9	25.8	26.3	25.4	28.9	28.3	27.6	25.9	28.9	29.7
Total, Seasonally Adjusted	1,823.2	1,871.4	1,905.7	1,917.0	1,933.1	1,955.8	1,961.8	1,990.9	2,005.1	2,002.9	1,991.2	2,000.0

Sources: Federal Reserve Bank and Urban Institute. Note: Small domestic banks includes all domestically chartered commercial banks not included in the top 25. Data as of July 2019.

MBS Ownership

Out of the \$1.8 trillion in MBS holdings at banks and thrifts as of Q1 2019, \$1.4 trillion was agency pass-throughs: \$1.0 trillion in GSE pass-throughs and \$383.5 billion in Ginnie Mae pass-throughs. Another \$422.2 billion was agency CMOs, while non-agency holdings totaled \$37.7 billion. MBS holdings at banks and thrifts increased for the second quarter in a row in Q1 2019. This increase was broad based, coming from Ginnie Mae and GSE pass-throughs, agency CMOs as well as non-agency holdings.

Bank and Thrift Residential MBS Holdings

	All Banks & Thrifts (\$Billions)						
	Total	Agency MBS PT	GSE PT	GNMA PT	Agency CMO	Private MBS PT	Private CMO
2000	\$683.90	\$392.85	\$234.01	\$84.26	\$198.04	\$21.57	\$71.43
2001	\$810.50	\$459.78	\$270.59	\$109.53	\$236.91	\$37.62	\$76.18
2002	\$912.36	\$557.43	\$376.11	\$101.46	\$244.98	\$20.08	\$89.88
2003	\$982.08	\$619.02	\$461.72	\$75.11	\$236.81	\$19.40	\$106.86
2004	\$1,113.89	\$724.61	\$572.40	\$49.33	\$208.18	\$20.55	\$160.55
2005	\$1,139.68	\$708.64	\$566.81	\$35.92	\$190.70	\$29.09	\$211.25
2006	\$1,207.09	\$742.28	\$628.52	\$31.13	\$179.21	\$42.32	\$243.28
2007	\$1,236.00	\$678.24	\$559.75	\$31.58	\$174.27	\$26.26	\$357.24
2008	\$1,299.76	\$820.12	\$638.78	\$100.36	\$207.66	\$12.93	\$259.04
2009	\$1,345.74	\$854.40	\$629.19	\$155.00	\$271.17	\$7.53	\$212.64
2010	\$1,433.38	\$847.13	\$600.80	\$163.13	\$397.30	\$7.34	\$181.61
2011	\$1,566.88	\$917.10	\$627.37	\$214.81	\$478.82	\$3.28	\$167.70
2012	\$1,578.86	\$953.76	\$707.87	\$242.54	\$469.27	\$17.16	\$138.67
2013	\$1,506.60	\$933.73	\$705.97	\$231.93	\$432.60	\$26.11	\$114.15
2014	\$1,539.32	\$964.16	\$733.71	\$230.45	\$449.90	\$20.33	\$104.94
2015	\$1,643.56	\$1,115.40	\$823.10	\$292.30	\$445.39	\$11.14	\$71.63
1Q16	\$1,660.58	\$1,133.29	\$833.25	\$300.04	\$448.63	\$10.27	\$68.39
2Q 16	\$1,684.33	\$1,169.67	\$867.64	\$302.03	\$440.25	\$9.11	\$65.29
3Q16	\$1,732.36	\$1,227.52	\$924.81	\$302.71	\$435.77	\$7.90	\$61.17
4Q16	\$1,736.93	\$1,254.13	\$930.67	\$323.46	\$419.80	\$7.40	\$55.60
1Q17	\$1,762.38	\$1,280.63	\$950.72	\$329.91	\$419.34	\$7.03	\$55.39
2Q17	\$1,798.66	\$1,320.59	\$985.12	\$335.47	\$417.89	\$6.38	\$53.79
3Q17	\$1,838.93	\$1,364.75	\$1,012.89	\$351.86	\$418.08	\$5.65	\$50.45
4Q17	\$1,844.15	\$1,378.53	\$1,010.83	\$367.70	\$413.97	\$4.63	\$47.01
1Q18	\$1,809.98	\$1,352.28	\$991.57	\$360.71	\$412.37	\$3.92	\$41.37
2Q18	\$1,806.58	\$1,345.80	\$976.92	\$368.88	\$414.41	\$7.45	\$38.92
3Q18	\$1,794.39	\$1,339.72	\$966.52	\$373.21	\$416.20	\$2.42	\$36.04
4Q18	\$1,814.97	\$1,361.00	\$980.56	\$380.43	\$419.59	\$2.69	\$34.69
1Q19	\$1,844.99	\$1,385.10	\$1,001.61	\$383.49	\$422.18	\$3.06	\$34.65

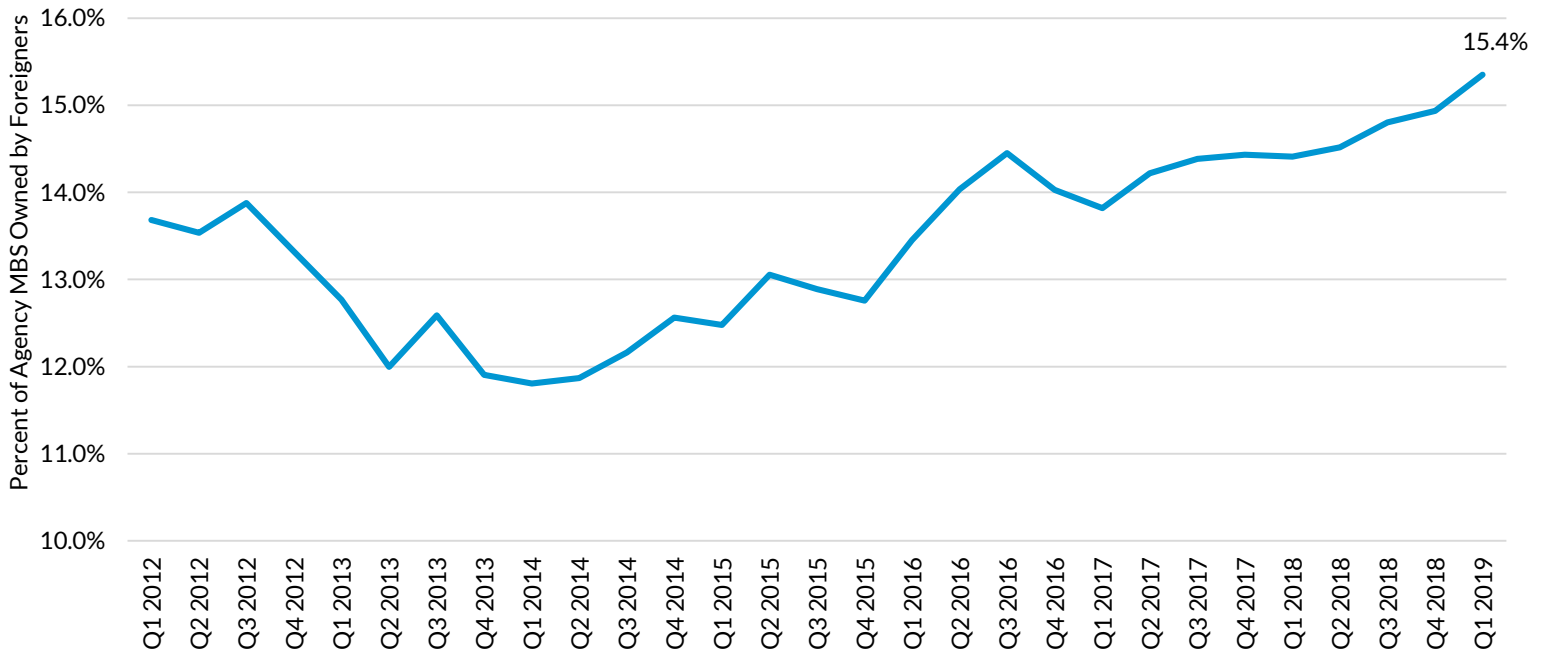
Top Bank & Thrift Residential MBS Investors		Total (\$MM)	GSE PT (\$MM)	GNMA PT (\$MM)	Agency REMIC (\$MM)	Non-Agency (\$MM)	Market Share
1	Bank of America Corporation	\$309,006	\$185,044	\$112,425	\$11,429	\$108	16.7%
2	Wells Fargo & Company	\$236,916	\$166,022	\$65,826	\$3,612	\$1,456	12.8%
3	JP Morgan Chase & Co.	\$100,099	\$64,579	\$25,134	\$273	\$10,113	5.4%
4	U.S. Bancorp.	\$82,516	\$39,490	\$18,179	\$24,847	\$1	4.5%
5	Charles Schwab Bank	\$77,668	\$46,991	\$12,097	\$18,580	\$0	4.2%
6	Capital One Financial Corporation	\$67,175	\$29,135	\$14,641	\$22,477	\$922	3.6%
7	Citigroup Inc.	\$66,897	\$52,945	\$4,265	\$7,244	\$2,443	3.6%
8	Bank of New York Mellon Corp.	\$52,218	\$30,982	\$2,363	\$17,519	\$1,354	2.8%
9	PNC Bank, National Association	\$47,069	\$38,505	\$3,661	\$2,625	\$2,277	2.6%
10	Branch Banking and Trust Company	\$41,642	\$15,966	\$15,964	\$7,341	\$2,371	2.3%
11	State Street Bank and Trust Company	\$39,389	\$14,416	\$5,969	\$18,507	\$497	2.1%
12	E*TRADE Bank	\$27,097	\$14,395	\$7,818	\$4,884	\$0	1.5%
13	HSBC Banks USA, National Association	\$25,230	\$12,317	\$3,594	\$9,319	\$0	1.4%
14	KeyBank National Association	\$24,252	\$7,164	\$7,284	\$9,801	\$3	1.3%
15	SunTrust Bank	\$23,284	\$1,741	\$871	\$20,673	\$0	1.3%
16	Morgan Stanley	\$23,147	\$11,736	\$11,180	\$231	\$1	1.3%
17	Ally Bank	\$21,913	\$12,930	\$3,085	\$3,144	\$2,754	1.2%
18	The Northern Trust Company	\$21,769	\$10,481	\$6,101	\$4,258	\$930	1.2%
19	MUFG Union Bank	\$18,268	\$11,383	\$4,215	\$2,668	\$2	1.0%
20	Regions Bank	\$17,685	\$5,367	\$3,836	\$7,549	\$932	1.0%
	Total Top 20	\$1,323,241	\$771,588	\$328,509	\$196,980	\$26,164	71.8%

Sources: Inside Mortgage Finance and Urban Institute. Note: Data as of Q1 2019.

MBS Ownership

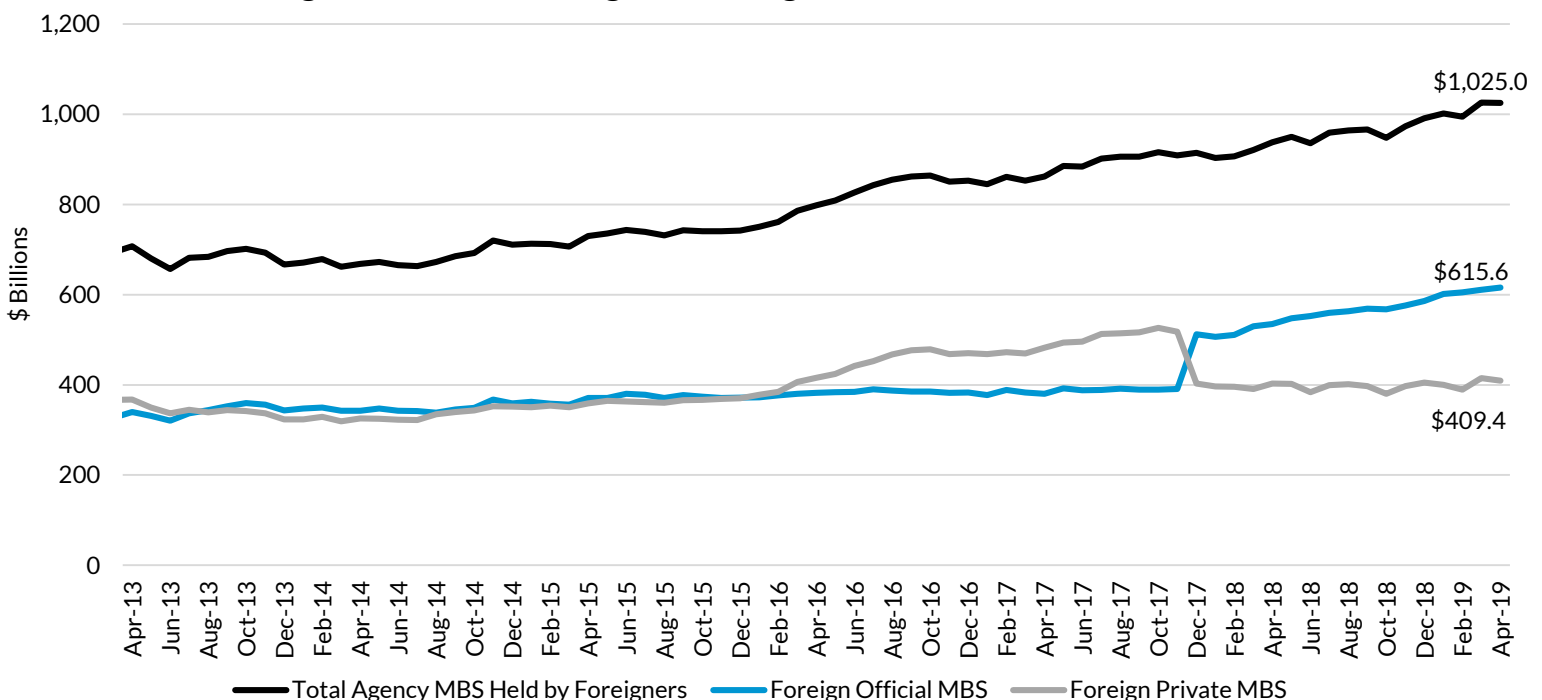
Foreign investors held 15.4 percent of agency MBS in Q1 2019, up from a low of 11.8 percent in Q1 2014. For the month of April 2019, this represents \$1.03 trillion in Agency MBS; \$409.4 billion held by foreign private institutions and \$615.6 billion held by foreign official investors.

Foreign Share of Agency MBS



Sources: SIFMA and Treasury International Capital (TIC). Note: Data as of Q1 2019.

Monthly Agency MBS Holdings by Foreigners



Sources: Treasury International Capital (TIC) and Urban Institute. Note: Data as of April 2019. In December 2017, there was a data correction that moved about \$120 billion from privately held U.S. agency bonds to officially held U.S. agency bonds; this resulted in a series break at December 2017 in the split between the portion held by foreign private and the portion held by foreign official.

MBS Ownership

The largest foreign holders of Agency MBS are Japan, Taiwan, and China; these three comprise over 70 percent of all foreign holdings. Between June 2018 and April 2019, we estimate China has increased their agency MBS holdings by \$31.9 billion, Taiwan has increased their holdings by \$14.3 billion, and Japan has increased their holdings by \$17.9 billion.

Agency MBS+ Agency Debt

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-18	Sep-18	Dec-18	Mar-19	Apr-19	Q3 2018	Q4 2018	Q1 2019	Apr-19
Japan	257,547	254,511	262,771	284,323	276,622	-3,036	8,260	21,552	-7,701
Taiwan	250,009	250,639	261,231	265,992	264,460	630	10,592	4,761	-1,532
China	180,635	190,203	188,921	208,540	213,992	9,568	-1,282	19,619	5,452
Ireland	46,817	48,220	48,045	46,623	50,412	1,403	-175	-1,422	3,789
Luxembourg	36,372	38,800	50,079	44,561	47,524	2,428	11,279	-5,518	2,963
South Korea	44,039	43,944	44,735	42,604	42,755	-95	791	-2,131	151
Bermuda	27,866	27,610	27,721	29,104	29,294	-256	111	1,383	190
Cayman Islands	31,017	31,638	31,379	30,375	33,588	621	-259	-1,004	3,213
Malaysia	12,710	12,874	12,671	12,395	12,430	164	-203	-276	35
Netherlands	11,995	12,229	9,618	9,400	10,522	234	-2,611	-218	1,122
Rest of World	125,197	128,807	130,345	129,998	137,661	3,610	1,538	-347	7,663
Total	1,024,200	1,039,475	1,067,516	1,103,915	1,119,260	15,275	28,041	36,399	15,345

Agency MBS Only (Estimates)

Country	Level of Holdings (\$Millions)*					Change in Holdings (\$Millions)*			
	Jun-18	Sep-18	Dec-18	Mar-19	Apr-19	Q3 2018	Q4 2018	Q1 2019	Apr-19
Japan	253,972	250,851	258,909	280,366	271,847	-3,121	8,058	21,457	-8,519
Taiwan	249,773	250,397	260,976	265,731	264,145	624	10,579	4,755	-1,586
China	176,345	185,811	184,287	203,791	208,262	9,466	-1,524	19,504	4,471
Ireland	37,832	39,021	38,339	36,677	38,411	1,189	-682	-1,662	1,734
Luxembourg	34,012	36,384	47,530	41,949	44,372	2,372	11,146	-5,581	2,423
South Korea	33,064	32,708	32,879	30,455	28,096	-356	171	-2,424	-2,359
Bermuda	24,969	24,644	24,592	25,897	25,425	-325	-53	1,306	-473
Cayman Islands	24,384	24,847	24,214	23,033	24,729	463	-634	-1,181	1,696
Malaysia	12,319	12,474	12,249	11,962	11,908	155	-225	-286	-54
Netherlands	11,437	11,658	9,015	8,782	9,777	221	-2,643	-233	994
Rest of World	95,510	98,414	98,276	97,137	98,010	2,904	-138	-1,139	873
Total	953,612	967,209	991,264	1,025,779	1,024,980	13,597	24,055	34,515	-799

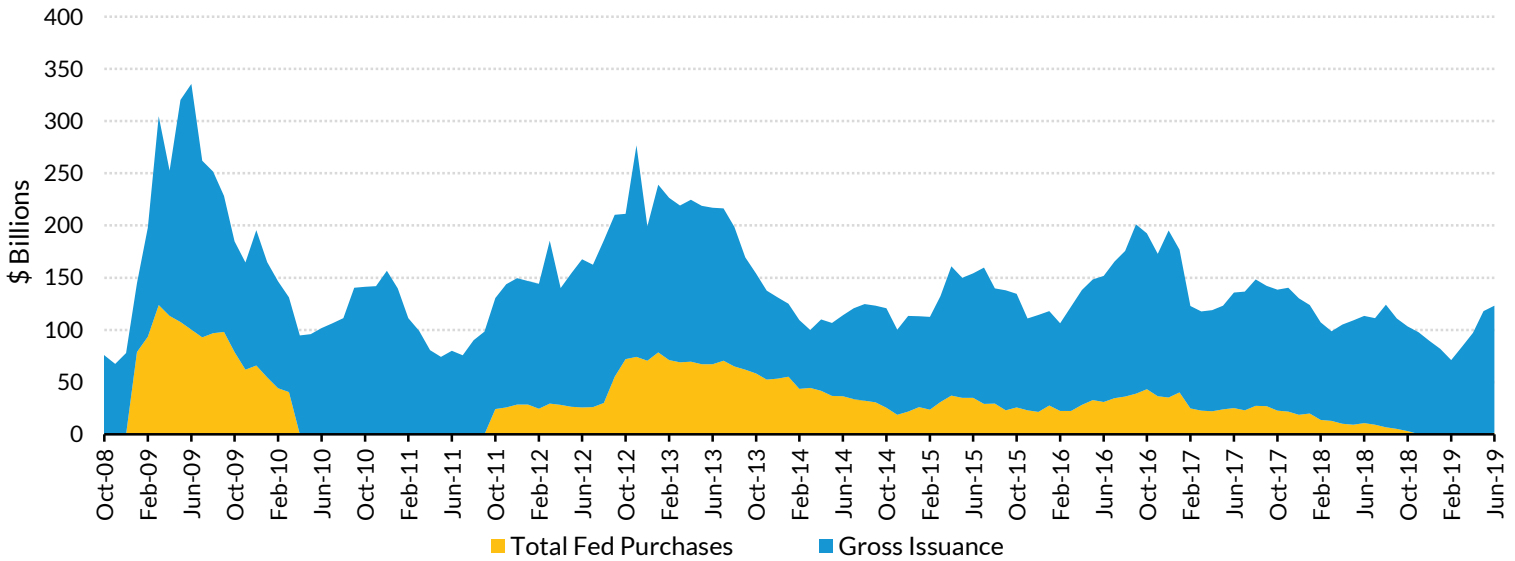
Sources :Treasury International Capital (TIC) and Urban Institute.

Note: *calculated based on June 2018 report with amount asset backed per country. Revised to include Top 10 holders of MBS listed as of June 2018. Monthly data as of April 2019.

MBS Ownership

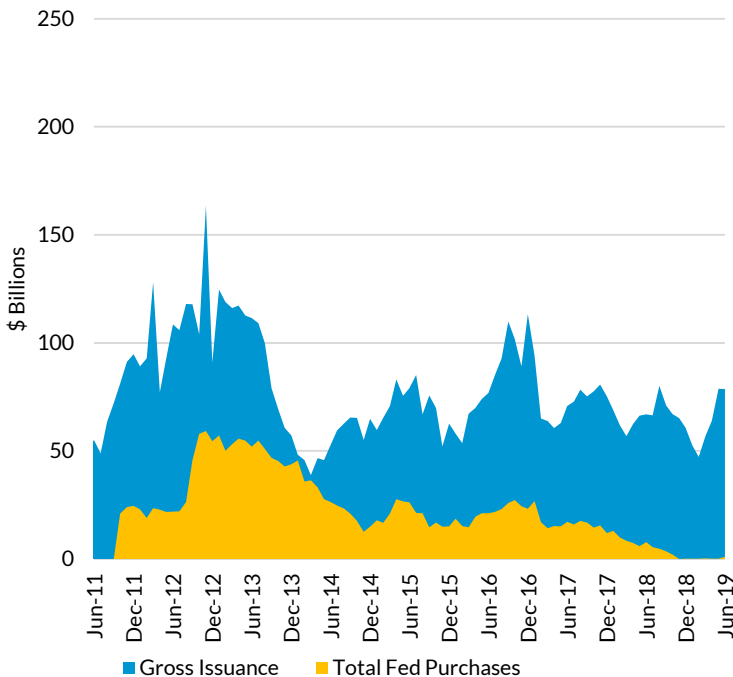
The Federal Reserve is actively winding down its mortgage portfolio; MBS purchases are very low. During the period October 2014-September 2017, the Fed ended its purchase program, but was reinvesting proceeds from mortgage and agency debt into the mortgage market, absorbing 20-30 percent of agency gross issuance. In October 2017, the Fed began to taper their mortgage holdings, initially letting securities run off at the rate of \$4 billion per month in Q4, 2017; \$8 billion per month in Q1, 2018; \$12 billion per month in Q2; \$16 billion per month in Q3; and \$20 billion per month in Q4, 2018 and thereafter. With the Fed now at its maximum taper, Fed absorption of gross issuance is 1.17 percent.

Total Fed Absorption



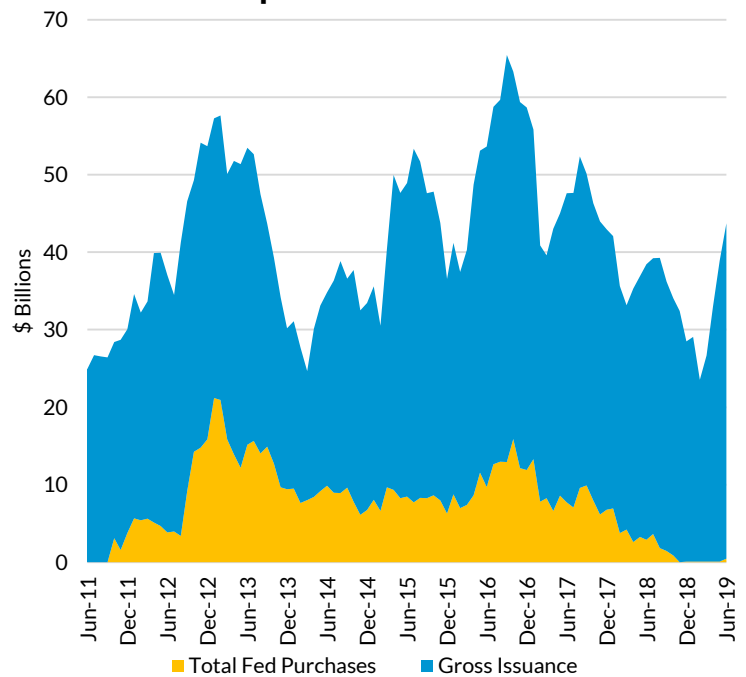
Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2019.

Fed Absorption of GSE MBS



Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2019.

Fed Absorption of Ginnie Mae MBS



Sources: eMBS, Federal Reserve Bank of New York and Urban Institute. Note: Data as of June 2019.

Disclosures

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